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Awareness, Knowledge, Attitude, and Practice of Patient Safety Culture Among Care Providers and Managers in a Tertiary Health Institution in Nigeria

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ABSTRACT

Introduction:
The safety of patients or clients remains a priority public health issue worldwide. Patient safety culture (PSC) is a core quality assurance strategy in healthcare delivery systems. Therefore, it is crucial for key stakeholders in the healthcare setting to perceive the concept. The present study determined the awareness, level of knowledge, attitude, and practice of PSC among care providers and managers in a tertiary health facility in Nigeria.

Materials and Methods:
This descriptive survey was carried out within June to November in 2016. Data collection was conducted via a self-administered structured questionnaire survey (QS), focus group discussions (FGD), and key informant interviews (KII). Stratified and convenient sampling techniques were used for QS, FGD, and KII, respectively. The data were analyzed using SPSS software (version 22), and associations were determined through the Chi-square test and t-test. A p-value of ≤ 0.05 was considered statistically significant.

Results:
The awareness, attitude, and practice of PSC were slightly above average. The knowledge of the availability of PSC unit affected the scores of 3 of the 12 studied PSC composites, namely Feedback and communication about the error, Nonpunitive response to error, and Management support ($P<0.05$). The overall PSC level of the care providers and managers was reported as 62.3%. The rate of PSC was within the range of 28-72% based on FGD. According to KII, the awareness and practice of PSC were reported as 100% and 60%, respectively.

Conclusion:
Based on the obtained results of the current study, it was apparently demonstrated the low awareness, attitude, and practice of PSC resulting in the low functionality of PSC. Therefore, it is required to take comprehensive educational and institutional measures aiming at the improvement of positive PSC. Management commitment to safety is a key element in this regard.

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Introduction

Patient safety (PS) is a key aspect of quality assurance in healthcare delivery systems (!). The Institute of Medicine committee recommends that healthcare organizations create environments in which patient safety culture (PSC) is an explicit top priority, driven by leadership (2). Another agency also recommends regular annual PSC assessment as a great step toward quality assurance (3). Safety culture is the core mechanism through which effective, efficient, and timely care devoid of harm is attained. It is a fundamental determinant of continuous learning, effective teamwork, safety behaviors, and safety outcomes (4,5). The PSC also determines the will and support to, the pattern and proficiency of the health and management of PS in an organization (6). This implies that a strong positive PSC is a prelude to optimal healthcare delivery.

Working in a strong positive PSC environment motivates employees to imbibe the culture of safety support mechanisms and systems (4). In such working environments, employees feel it is obligatory to report potential harm, have team spirit and cooperation inculcated in them, seek help if necessary, and believe in recognition and reward for making PS a priority (2,4). The PSC as a part of the social work environment shapes the awareness, knowledge, attitude, and practice (AKAP) of healthcare providers in daily work activities. Therefore, the maintenance of PSC demands emphasizing a care delivery system that averts errors, learns from previous ones, and builds on a tripod of perspectives managers, providers, and clients (7). Poor PS has negatively affected the healthcare systems of developing countries (8) arising from harmful patient care practices in the system. A starting point for the accomplishment of an improved PSC is to conduct an assessment of the current PSC of an organization (9). This serves as a baseline in the determination of the factors affecting the provision of safe patient care in an organization (9).

Although there is increased attention in Africa with respect to PSC, there has been limited information about PS challenges and quality improvement opportunities (10). This establishes the case for a paradigm shift in PSC and requires a clear perception of avoidable patient harm within the system.

There is a lack of studies carried out on PSC in Nigeria (11,12) where studies were only performed on the pharmacy sections of either the hospitals in the different levels of the healthcare system (11) or pharmacy section of a single tertiary hospital (12). Sufficient studies on the extent and practice of PSCin Nigerian teaching hospitals will contribute to PS by gauging current knowledge, exploring existing practices, comparing them to the global standard best practices, and making recommendations on key areas for PSC improvement. The current study aimed to determine the AKAP of PSC among care providers and managers at Nnamdi Azikiwe University Teaching Hospital (NAUTH) in Nnewi, Nigeria.

Materials and Methods

Study design: This descriptive survey was carried out on the AKAP **o**f PSC in NAUTH.

Study setting: This study was conducted in NAUTH, a tertiary healthcare institution in Nnewi, Anambra State, Nigeria, within June to November in 2016. This study was performed in the Medical, Surgical, Pediatrics, Obstetrics and Gynecology, General Outpatient, Accident and Emergency, Intensive Care Unit, Pharmacy, Nursing, Physiotherapy, Laboratory and Health Information Management (i.e., Medical Records) departments of the hospital. The hospital has an accredited safety program, with a functional PS committee; however, the hospital management represents an area of strength in adopting, developing, and ensuring the implementation of relevant PS policies and procedures. The NAUTH provides services to a wide range of patients and clients from a catchment spanning the state and beyond. However, the offered primary activities comprise specialist healthcare delivery and research and training of undergraduates and postgraduates in medical and allied sciences.

The data were collected using questionnaires designed based on the relevant literature and adapted from a 12-factor 42-item QS (i.e., the World Health Organization [WHO] hospital survey on PSC) (4,6,8,13-17). This survey tool evaluates 10 climate dimensions of PS, with two outcome

measures (i.e., the overall perception of PS and frequency of reported events) (6,8,14,16, 17). The strengths of the WHO instrument include being based on a cross-culturally sensitive concept, truly available, tested, well-validated, unambiguous language, simple scale that is easy to comprehend, and its psychometric properties. Appropriate facilitator guides developed by the researchers from the same sources (4,6, 8, 13-17) were used for focus group discussions (FGD) and key informant interviews (KII), respectively.

Study participants: Three population categories were involved in the study, including 1) calculated samples from the groups of professionals (i.e., physicians, pharmacists, nurses, laboratory scientists, physiotherapists, and medical record officers), 2) FGD among focal individuals from various professional groups, and 3) KII with top hospital management officers.

Inclusion criteria: Healthcare professionals on the full appointment with at least one year of experience and giving consent were the inclusion criteria of the current study.

Exclusion criteria: Healthcare professionals who were not on seat during the period of study and respondents for the pretest, FGD, and KII were also excluded from the QS.

Variables: The dependent variable of the present study was the PSC composite score; however, the independent variables were demographics (e.g., gender) and awareness, knowledge, attitude, and practice of PSC.

Data sources/ measurement: The frequencies of the variables were assessed using univariate analysis; nevertheless, bivariate analysis and Chi-square test were used for the determination of associations between the variables.

Bias: There could have been over- or under-reporting bias resulting from the sensitive nature of the questions. This could have been eliminated using anonymous questionnaires, mixed study methods, and assuring the participants of confidentiality terms.

Sample size:

Sample size determination: The sample size was determined based on the estimated population of 1,200 healthcare professionals employed in NAUTH using the formula for cross-sectional studies for proportions greater than 10,000 as follows:

(18) $n = z^2 pq / d^2$

where *n* stands for minimum sample size; *z* denotes standard normal deviate set at 95% confidence interval of 1.96; *p* is the practice prevalence of PSC in the study institution (estimated at 0.5 since none was available); *q* is equal to 1; *p* and *d* are the degrees of accuracy (5%=0.05). Therefore, the estimated sample size was obtained at 384. Since the estimated sample size was less than 10,000, the sample size was adjusted using the following formula:

(18) $N1 = n /1 + (n/N)$

According to the aforementioned formula, N1 equaled 288. Considering a 10% attrition rate, the actual sample size was calculated at 315.

Sampling technique: For the QS, a stratified random sampling technique was employed. The respondents of the QS were stratified into the ratio of 3:2:1:1:1:1 for nurses, physicians, pharmacists, laboratory scientists, physiotherapists, and medical record professionals, respectively (considering the population of the respective professionals in the hospital). Therefore, a sample of 105 nurses, 70 physicians, 35 pharmacists, 35 health records officers, 35 laboratory scientists, and 35 physiotherapists was proportionately allocated and enrolled in the survey. However, the adjustments were made for the less populated professions in comparison to more populated ones. A convenient sampling technique was used to select the participants for both FGD and KII. For FGD, 22 respondents (two from physiotherapy and four from each of the other five departments) were chosen for the two sessions conducted (11 professionals per session). For KII, five hospital management officers as directors and assistant directors were interviewed.

Data collection: For the QS, a structured questionnaire was self-administered consisted of five sections, namely a) demographic variables, b) awareness, c) knowledge, d) attitude, and e) practice of PSC. A facilitator was employed for the moderation of FGD and KII.

Data management: Measurement of variables: For the AKAP of PSC among the respondents, the PSC composites were regrouped according to AKAP composites,

respectively. Raw scores were calculated for each of the groups and the resultant score for each group was transformed to a scale of 0-100 (0-60: poor; 61-90: fair; 91-100: good) and presented as the AKAP of the respondents.

Statistical analysis: The collected data were inspected for coding errors and entered into and analyzed with SPSS software (version 22.0.) (19). Descriptive statistics were computed for the demographic variables (i.e., gender, profession, work unit/area, year of experience, and working hours per week) of the respondents.

Quantitative variables: The continuous variables were analyzed; therefore, the frequency distribution of relevant variables was obtained. Means, standard deviations, and proportions were calculated; however, associations between variables were identified using the Chi-square test and t-test as appropriate. A p-value of ≤ 0.05 was considered statistically significant.

Pretest: A pretest was carried out on 20 healthcare professionals in the same institution, selected from those who were excluded from the main study, and the results were used to modify the questionnaire for the main QS.

Results

Results of QS: A total of 370 questionnaires were administered 321 of which were returned. Out of 321 questionnaires, 40 questionnaires were rejected after consistency checks; however, 281 questionnaires were valid, giving a response rate of 87% and validity rate of 88%. Table 1 shows some demographic variables of the respondents.

Table 1: Demographic characteristics of respondents

Variables.	Proportion of respondent's n (%)		
	Male	female	Total n (%)
Profession (n = 281)			
Doctors	36	37	73 (26.0)
Pharmacists	9	34	43 (15.3)
Nurses	2	94	96 (34.2)
Physiotherapists	5	2	7 (2.5)
Medical Laboratory Scientists	5	22	27 (9.6)
Health Record Officers	6	29	35 (12.5)
Length of service (n = 281)			
1-5 years	23	76	99 (35.2)
6-10 years	30	67	97 (34.5)
11-15 years	6	28	34 (12.1)
16-20 years	2	29	31 (11.3)
21 years or more	2	18	20 (7.5)
Length of time in current area/unit (n = 281)			
<1 year	6	17	23 (8.2)
1-5 years	36	109	145 (51.6)
6-10 years	18	58	76 (27.0)
11-15 years	2	20	22 (7.8)
16-20 years	0	9	9 (3.2)
21 years or more	1	5	6 (2.1)
Hours per week at work (n = 281)			
<20 hours per week	1	2	3 (1.1)
20-39 hours per week	12	48	60 (21.4)
40-59 hours per week	22	114	136 (48.4)
60-79 hours per week	13	34	47 (16.8)
80-99 hours per week	6	14	20 (7.5)
100 hours per week or more	9	6	15 (5.4)
Have direct interaction with patients			
Yes	63	208	271 (96.44)
No	-	10	10 (3.6)

The majority of the respondents were nurses. Most (35%) of them have still had 5 years of experience, and only 8% of them have worked for more than 20 years in the study institution. Almost half of them work within 40-59 h per week, and about 30% of them work beyond this period per week. The frequency distribution of respondents' work area/unit and PSC composite scores in the study institution are shown in Table 2. The respondents scored above the average in each of the PSC composites considered in the survey; nevertheless, Staffing and Nonpunitive response to error had the poorest scores. Overall, the PS rate of the hospital was reported as 62.3%. The Supervisor expectations and actions promoting PS ranked the highest with a positive score (70.7%) of the PSC studied composites.

Table 2: Frequency distribution of respondents work area/unit and patient safety culture composite scores in the study institution

Frequency distribution of respondents work area/unit Primary work area or unit	**Frequency**	**Percent**
Nursing unit	103	36.7
Pharmacy unit	40	14.2
Health records unit	32	11.4
Laboratory unit	28	10.0
Physiotherapy unit	7	2.5
Medical (non-surgical) unit	45	16.0
Surgical unit	9	3.2
Emergency units (A&E and ICU)	10	3.5
Pediatric unit	7	2.5
Total	281	100.0
Patient safety culture composite scores		
Variables	**Mean**	**SD**
Frequency of error reporting	51.7	22.8
Overall perception of safety	54.5	16.4
Supervisor/manager expectations and actions promoting safety	70.7	15.6
Organizational learning - continuous improvement	64.9	19.0
Teamwork within the unit	65.3	18.1
Communication openness	54.5	18.9
Feedback and communication about error	60.9	19.4
Non-punitive response to error	43.1	18.9
Staffing	46.2	15.7
Executive management support for patient safety	56.9	20.6
Teamwork across units	59.6	16.2
Hospital hands-off and transition	53.7	17.3
Overall grade on patient safety culture	62.3	22.2

The QS revealed that the awareness, attitude, and practice of PSC to be slightly above the average (Table 3).

Awareness scored the least (54.5%) among the three items. About 54% of the respondents have never reported any of the safety events experienced in their practice. The overall assessment of the PS grade of the hospital units was carried out. A very good PS grade was reported among 35% of the nurses and 38% of the medical record departments. All other departments/units reported that PSC in their unit was at an acceptable level.

On the overall unit assessment, the majority (43.4%) of the professionals rated the PSC practice of the hospital units as acceptable PS grade.

Table 4 summarizes the impact of the knowledge of patient safety operation procedure (PSOP) on PSC and effect of knowledge of patient safety unit (PSU) availability on PSC (Yes: 81; No: 74). Having this knowledge influenced the scores on Organizational learning/Continuous improvement, Management support for PS, Feedback and communication about error, and Teamwork across units ($P \leq 0.05$).

Table 3: Knowledge, attitude and practice of patient safety culture, event reports in the past 12 months and overall patient safety ratings for work area/ unit (%)

Knowledge, attitude and practice of patient safety culture	**Minimum**	**Maximum**	**Mean**	**SD**
Knowledge of patient safety culture	8	100	54.5	16.4
Attitude to patient safety culture	27	90	56.1	11.5
Practice of Patient Safety culture	27	93	59	11.8
Event reports in the past 12 months	**Frequency**	**Percent**		
Reported (%)				
Not reported (%)				
Total				

Overall patient safety ratings for work area/ unit (%)						
Work area/ unit	**Excellent**	**Very Good**	**Acceptable**	**Poor**	**Failin**	**Total**
Medical	2	9	32	4	-	47
Surgical	1	2	6	-	-	9
A & E /ICU*	1	1	4	2	-	7
Paediatrics	-	-	5	2	-	8
Pharmacy	5	14	16	5	-	40
Nursing	21	36	34	10	2	103
Laboratory	3	12	13	-	-	28
Medical records	8	12	8	4	-	32
Physiotherapy	-	2	4	1	-	7
Total	41(14.6)	88(31.3)	1122(43.4)	28(10.0)	2(0.7)	281(100)

* A & E /ICU – Accident and emergency/ Intensive care unit

Table 4: Impact of knowledge of patient safety operation procedure on patient safety culture and effect of knowledge of patient safety unit availability on patient safety culture (Yes: 81; No: 74)

	P SOP		NO PSOP					
PSC Composites	**M**	**SD**	**M**	**SD**	**Df**	**t value**	**p value**	**MD**
Frequency of error reporting	54.0	23.0	47.4	25.1	199	1.73	.084	6.61
Hospital hands-off and transition	56.2	17.8	51.3	16.4	199	1.72	.088	4.86
Overall perception of safety	51.2	16.7	56.7	15.5	199	-.91	.365	-2.53
Supervisor/manager expectations & actions promoting safety	71.7	15.5	67.1	18.1	199	1.74	.083	4.57
Organizational learning - continuous improvement	68.9	.3	59.9	18.1	91.6	3.01	.003*	8.98
Executive management support for patient safety	60.5	19.5	52.3	23.7	74.5	2.24	.028*	8.23
Teamwork within the unit	67.4	18.4	63.6	17.8	199	1.31	.190	3.88
Communication openness	56.4	18.4	51.1	18.4	199	1.76	0.81	5.25
Feedback and communication about error	64.0	18.3	55.1	21.7	75.6	2.63	.010*	8.94
Teamwork across units	62.2	16.1	56.5	16.3	85.6	2.14	.035*	5.63
Non-punitive response to error	43.6	18.9	42.7	21.1	199	.295	.769	.928
Staffing	47.1	15.1	45.8	18.1	199	.504	.615	1.30
	PSU		**NO PSU**					
PSC Composites	**M**	**SD**	**M**	**SD**	**Df**	**t value**	**p value**	**MD**
Frequency of error reporting	54.6	25.0	50.3	23.7	153	1.094	.276	4.29
Hospital hands-off and transition	56.1	17.4	54.2	18.5	153	.661	.510	1.90
Overall perception of safety	53.4	18.3	56.0	17.9	153	-.885	.378	-2.57
Supervisor/manager expectations & actions promoting safety	72.3	15.8	68.8	17.5	153	1.292	.198	3.46
Organizational learning - continuous improvement	67.6	18.6	63.8	19.5	153	1.246	.215	3.81
Executive management support for patient safety	62.8	18.1	52.9	23.6	153	2.931	.004	9.97
Teamwork within the unit	65.6	18.9	63.9	17.6	153	.607	.545	1.76
Communication openness	54.2	19.1	53.9	17.8	153	.093	.926	.28
Feedback and communication about error	64.5	19.2	58.3	18.5	153	2.039	.043*	6.17
Teamwork across units	63.0	17.1	59.2	16.8	153	1.366	.174	3.73
Non-punitive response to error	47.2	19.0	40.5	17.5	153	2.265	.025*	6.65
Staffing	47.4	15.6	44.9	17.2	153	.948	.345	2.50

PSOP = Patient safety operation procedure, NO PSOP = No Patient safety operation procedure, M = Mean, SD = Standard deviation, MD = Mean difference, PSU = Patient safety unit, NO PSU = No patient safety unit

However, this knowledge did not affect other facets of the studied PSC (P>0.05). The knowledge of the availability of PSU in the hospital influenced the scores of three PSC composites, including Feedback and communication about error, Nonpunitive response to error, and Management support for PS (P≤0.05).

In addition, 73 respondents reported that the PS committee of the institution regularly meets for effective PS operations. This belief positively affected respondents' scores on the seven dimensions of the studied PSC, including Organizational learning/Continuous improvement, Teamwork within the unit, Communication openness, Frequency of error reporting, Feedback and communication about error, Management support for PS, and Teamwork across units.

Results of FGD and KII: Figure 1 illustrates the overall hospital PSC rating based on FGD. The discussants rated the PSC of the hospital between poor (28%) and fair (72%). Figure 2 depicts the PSC position of the hospital according to KII. Moreover, 100% of the participants reported the awareness of PSC practices; nevertheless, 60% of the subjects reported good PSC practice.

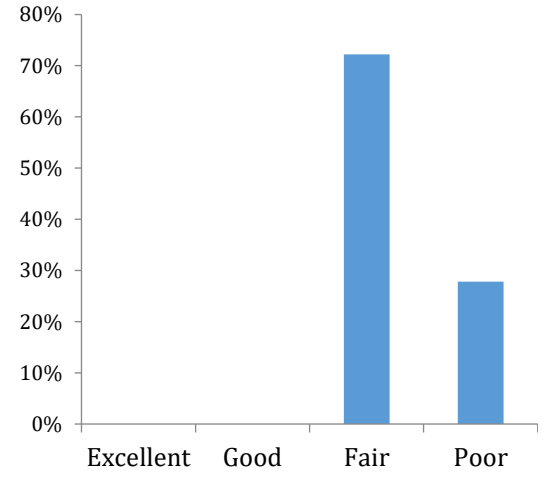

Figure 1: Overall hospital patient safety culture rating from the focus group discussion

Discussion

This descriptive survey determined the AKAP of PSC among care providers and managers in a tertiary hospital in Nigeria. The frequency distribution of work area/unit and PSC composite scores in the current research were generally poor. In terms of scores, Staffing and Nonpunitive responses to error were reported as the poorest. These findings are in line with the results of a study carried out on the frequency and nature of adverse events among patients in 26 health facilities in eight low-income countries (8). This reference study revealed up to 18% occurrence per country (8). According to the aforementioned similar reference study, 83% of the unreported adverse events are preventable (8).

Based on the findings of the index QS, the awareness, attitude, and practice of PSC were poor (only above average, with the awareness scoring of the least 54.5%). This result is in line with the findings of a study conducted in Enugu, Nigeria, where the awareness of PSC is poor; however, among surgeons only (20) Kerfoot et al. (21) reports limited level of knowledge of PSC among medical trainees.

A similar study carried out in the health facilities of Zabol, Iran, demonstrated an average performance regarding the knowledge and practice of participants on different composites of PSC (8). In addition, a study performed in Enugu, Nigeria, reports poor PSC practice (20). In view of the current trends in the burden of disease globally, coupled with a dearth of evidence on PSC, there is a need for improvement and further studies.

Based on the findings of the index research, more than half of the participants never reported any safety events in the 12 months preceding the study demonstrating poor attitude toward PSC among healthcare providers. Even among providers reporting PS events, the majority of them rarely did so, thereby affecting the Frequency of error reporting composite score. However, the appreciable number never reported any PS events, implying poor attitude toward PSC across cadres of healthcare providers. This poor attitude toward PS event reporting could possibly be due to fear of punitive response to error as revealed by a poor composite score for Nonpunitive response to error. This finding is in contrast to an ideal PSC situation where medical errors and mistakes are opportunities for learning

and improvement (22). It is difficult to maintain an ideal state in nature; therefore, the findings of studies elsewhere are in line with the results of the current study (23,24, 25). One reason deduced for this scenario is the feeling of the participants that their mistakes are held against them (24).

The findings of the current study showed that the knowledge of PSOP affected PSC composites, including Organizational learning/Continuous improvement, Management support for PS, Feedback and communication about error, and Teamwork across units. Furthermore, the knowledge of the availability of PSC unit in the hospital also impacted on the scores of three PSC composites, namely Feedback and communication about error, Nonpunitive response to error, and Management support for PS. This report positively affected the scores of seven dimensions of the PSC in the present study, including Organizational learning/ Continuous improvement, Teamwork within the unit, Communication openness, Frequency of error reporting, and Feedback and communication about error. These findings of the present study are in line with the results of several studies carried out in different parts of the world (17,26-29) and studies performed in Nigeria (11,12).

The findings of the current study regarding the overall grade of the practice of PSC of the hospital was slightly above average which is also consistent with the results of a baseline assessment of PSC in public hospitals in another study (30) and that the overall perception of PS feedback and communication about error and staffing are all below 60% (17). The result is surprising since the study setting is a teaching hospital where there are seasoned academics, such as professors, specialists, and residents, who are exposed to PSC practices through training and service delivery.

According to the findings of the current study, four out of the six departments rated the PSC performance of their work unit/department at an acceptable level (i.e., Medical, Surgical, Accident and Emergency, Paediatrics, Physiotherapy, Pharmacy, and Laboratory units); however, only two units (Nursing and Medical records) were rated as very good. A study carried in the hospitals of Ilam, Iran, reported that the hospitals had unacceptable PSC (29). This finding suggests an obvious need for improvement on the PSC status of the study institution.

Strengths and Limitations: The strengths of the current study included the use of a standardized instrument and mixed-method survey providing detailed information. Most studies in this setting deal with a particular aspect of care delivery or particular group of healthcare professionals. The limitations of the present study included the use of cross-sectional design and no assessment of representative public health actions as the study focused on the tertiary level only. Therefore, it is required to carry out further studies in order to accommodate this issue and provide more evidence for policymaking and implementation.

Conclusion: The findings of the present study apparently revealed the low awareness, attitude, and practice of PSC, resulting in the low functionality of PSC. The PSC grade of the hospital is just above average. The knowledge of the availability of PSC unit in the hospital affected the scores of three PSC composites, namely Nonpunitive response to error, Staffing, and Teamwork across hospital units, which are the major areas of weakness. The overall PSC level of the hospital is just fair. Based on the aforementioned findings, several recommendations are made. More awareness should be developed in the study institution on the existence of safety programs and logistics, such as safety culture operation procedures and guidelines available to the professionals. Training and retraining programs should be also periodically organized on safety-related issues to promote the knowledge, attitude, and practice of PSC. In addition, error reporting should be encouraged by motivational strategies and staff should be alerted in this regard in order to alleviate the fear of punitive measures for reporting among professionals. Furthermore, workshops and seminars should be periodically held on teamwork and coordination among different professional groups for the improvement of the team environment required for effective patient care.

Ethics approval and consent to participate

This study was examined and approved by the Ethics Committee of NAUTH. Written informed consent was obtained from each participant for the conduct and publication of the present study, and the study subjects were assured of observing the confidentiality terms. The study participants were free to refuse or withdraw from the study at any time without any penalty. The objectives were explained to each participant prior to the interview. All the authors declare that the study was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

References

1. Mitchell PH. Defining Patient Safety and Quality Care. In Hughes, R.G., Ed., Patient safety and quality an evidence-based handbook for nurses, AHRQ ... 08-0043, Agency for Healthcare Research and Quality, Rockville, Advances in Patient Safety.2008:1-5
2. Kohn LT, Corrigan JM, Donaldson, MS. editors. To err is human: building a safer health system. Institute of Medicine (US) Committee on Quality of Health Care in America; National Academies Press (US). Washington (DC).2000; 3:305-8.
3. Sorra J, FamolaroT, Yount ND, Smith SA, Wilson, S, Liu H. Hospital Survey on Patient Safety Culture 2014 user comparative database report.2014. Retrieved from .psnet.ahrq.gov › issue › hospital-survey-patient-safety-culture-2014- u, on 18/03/2020.
4. Singer S, Meterko M, Baker L, Gaba D., Falwell A, Rosen A. Workforce perceptions of hospital safety culture: Development and validation of the patient safety climate in healthcare organizations survey. Health Services Research. 2007; 42(5): 1999–2021.
5. Braithwaite J, Westbrook MT, Travaglia J.F, Hughes C. Cultural and associated enablers of, and barriers to, adverse incident reporting. Quality and Safety in Health Care 2010;19(2):229-33.
6. Agency for Healthcare Research and Quality. Hospital survey on patient safety culture. Background and information for translators. Journal of Patient Safety. 2009; 5(3):139-44.
7. Stavrianopoulos T. The development of patient safety culture. Health Science Journal 2012; 6(2): 201-11.
8. Wilson RM., Michel P, Olsen S, Gibberd RW, Vincent C, El-Assady R, et al … Group, W. H. O. P. S. E. W. Patient safety in developing countries: retrospective estimation of scale and nature of harm to patients in hospital. Bmj, 2012l 344 (mar13_3), e832.
9. Ulrich B, Kear T. Patient safety and patient safety culture: Foundations of excellent health care delivery.2014;41(5):447–57.
10. Powell S, Baily D, Ndili N. Ente C. Patient safety in Africa : a culture shift ? Patient safety & quality healthcare. 2011. [Online].; 2012 [cited 2020 March 19. Available from: www .psqh.com › analysis › patient-safety-in-africa-a-culture-shift.
11. Eniojukan J, Okinedo P, Ishiekwene A., Aghoja O. Comparative Evaluation of Pharmacy Patient Safety Culture in all Levels of Health Care Delivery in Delta State, Nigeria. UK Journal of Pharmaceutical and Biosciences.2015;3(5):30–40.
12. Owonaro P, Eneyi K, Eniojukan J, Joshua F, Pharmacy patient safety: 1. evaluation of pharmacy patient safety culture in a tertiary hospital in Bayelsa State, Nigeria. Scholars Academic Journal of PharmacyOnline) Sch. Acad. J. Pharm, 2015;4(2):2320–4206
13. World Health Organization|10 facts on patient safety. 2014. Retrieved from http:// www. who. int/features/factfiles/patient_safety/en/\nhttp:/ /www.ihi.org/Topics/PatientSafety/Pages/Resources.aspx on 18/03/2020.
14. Chen IC, Li HH. Measuring patient safety culture in Taiwan using the hospital survey on patient safety culture (HSOPSC). BMC Health Serv Res,2010.10(1):152.
15. Adams-Pizarro I, Walker Z, Robinson J, Kelly S. Toth M. Using the AHQR hospital survey on patient safety culture as an intervention tool for regional clinical improvement collaboratives. Advances in patient safety: new directions and alternative approaches 2008:2(2):1-20.
16. Rockville W, Sorra JNV. Hospital survey on patient safety culture. Rehabilitation. 2004; 2(04): 842–8.
17. Agency for Healthcare Research and Quality. Hospital survey on patient safety culture. 2016. Retrieved from http:// www. ahrq. gov/ professionals/quality-patient-safety/ patient-safetyculture/ hospital/index.html. Retrieved 13th June, 2016
18. Araoye MO. Research methodology with statistics for health and social sciences. 2nd ed. Illorin. Nathadex Publications; 2008. P.115–22
19. Statistical Package for Social Sciences (IBM SPSS) 22.0 version. Armonk NY: IBM United States. IBM Corp. 2013.
20. Nwosu AD, Onyekwulu, FA, Aniwada EC. Patient safety awareness among 309 surgeons in Enugu, Nigeria: a cross-sectional survey. Patient safety in surgery. 2019; 13:33.
21. Kerfoot P, Conlin PR, Travison T, McMahon GT. Patient safety knowledge and its Determinants in medical trainees. J Gen Intern Med. 2007; 22: 1150–1154. doi: 10.1007/s11606-007-0247-8.
22. Weaver SJ, Lubomksi LH, Wilson RF, Pfoh ER,

Martinez KA, Dy SM. Promoting a culture of safety as a patient safety strategy: a systematic review. Ann Intern Med.2013;158(5 Pt 2):369–74.
23. Fujita S, Seto K, Kitazawa T, Matsumoto K, Hasegawa T. Characteristics of unit-level patient safety culture in hospitals in Japan: a cross-sectional study. BMC Health Services Research, 2014;14:508.
24. Vlayen A, Hellings J, Barrado L, Haelterman M, Peleman H, Schrooten W, Claes N. Evolution of patient safety culture in Belgian acute, psychiatric and long-term care hospitals. Safety in Health. 2015:10(1):27040.
25. Wagner C, Smits M, Sorra J, Huang CC Assessing patient safety culture in hospitals across countries. International Journal for Quality in Health Care, 2013;25(3):213–21.
26. El-Jardali F, Sheikh F, Garcia NA, Jamal D, Abdo A Patient safety culture in a large teaching hospital in Riyadh: baseline assessment, comparative b
27. analysis and opportunities for improvement. BMC Health Services Research.2014;14,:122.
28. Azami SA., Ebadi-fard AF, Mirnia K, Azami A, Saadat M. Patient safety culture : a meta-analysis of data from hospitals IJHR. 2014l3(4):209–17.
29. Laal F, Fazli B., Balarak D, Dalir F, Mohammadi M. Attitude toward the patient safety culture in healthcare systems article history. Patient Saf Qual Improvement.2015;1(2): 364–9.
30. Nourmoradi H, Kazemi M, Pirmoradi F, Mirzaei A, Mirzaei M, Moghadam F et al., Hospital patient safety culture in developing countries: a comparative study in Ilam City, Iran. British Journal of Medicine and Medical Research, 20`5; 10(5): 1–8.
31. Ali H, Ibrahem SZ, Al MudafBf El-Jardali F Baseline assessment of patient safety culture in public hospitals in Kuwait. BMC Health Services Research 2018: 18(1). DOI: 10.1186/s12913-018-2960-x.