

# Situational Analysis of Patient Safety Culture in Public Health Institutions in South-South Nigeria

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**Keywords** Patient safety culture; Clinical staff; Tertiary hospital; Safety attitude questionnaire; Nigeria

## Abstract

**Background:** Patient safety culture (PSC) is increasingly being seen as vital, measurable and improvable concept in improving quality of health care globally. This study assessed the PSC among clinical staff in primary and tertiary health facilities in the Nigerian health care setting.

**Methods:** A cross-sectional survey of clinical staff from one tertiary and 12 primary health facility in south-south zone of Nigeria. Perceptions of PSC were measured with 5-point Likert scale along the 8 domains of the 62-item ambulatory version of the Safety Attitude Questionnaire (SAQ-AV). Positive PSC was inferred with scores  $\geq 75\%$ .

**Results:** The response rates from staff in the primary and tertiary facilities were 76.5% and 40.2% respectively while the Cronbach's alpha for the entire scale was 0.89 with a range of 0.59 - 0.80 in the domains of the SAQ-AV. The mean age of the respondents was  $33.1 \pm 6.79$  years; more were nurses (27.3%), females (57.6%) and work as permanent staff (74.5%). The level of PSC was significantly higher in the primary level of care along the domains of the SAQ-AV except for job satisfaction and stress recognition.

**Conclusions:** The overall level of PSC was low and there were significant variations between levels of practice. These findings call for appropriate interventions to improve PSC among health care providers in Nigeria.

## Introduction

Interest in the measurement and management of patient safety within the context of health care quality improvement has been on the increase in the last 3 decades. The 1991 report of the Harvard medical study which reviewed over 30,000 medical records revealed that a considerable amount of injury to patients stemmed from medical mismanagement or iatrogenic harm, hence establishing patient safety as a frontline concern in medical discuss globally [1]. Subsequent reports such as 'To Err is Human' and 'An Organization with a Memory' further corroborated the earlier Harvard report, making it imperative to evolve systems that will continuously improve quality and patient safety in different health care settings [2,3].

Despite the quest for continuous improvement in quality and safety in health care delivery around the globe, research in quality and patient safety is still a challenge especially in developing countries. A 2005 meeting of health care providers which focused on quality care through prevention of medical error in Kenya recognized the dearth of research evidence on the magnitude of medical error and patient safety in the Africa region [4]. Considering the challenges in the health care setting in Africa, many patients may be suffering from adverse patient safety events such as prolonged ill-health, protracted hospital stays, disability, disease and even death caused by unsafe vaccinations, injections, blood transfusions, counterfeit or substandard drugs, unreliable equipment and practices, inadequate infection control, and overall poor health services, facilities and environments [4-6].

Patient safety is the reduction to an acceptable minimum, of the risk of unnecessary harm or freedom from harm or accident in the course of providing healthcare [4,7-9]. Patient safety efforts impacts most importantly on the "processes" of health care, which ensure that the potential for errors or it tendencies to result in harm to the patient by individual health care work is minimized [10,11].

More attention has been given to the assessment and improvement of safety in aviation, manufacturing, nuclear and shipping industries than is done in the health sector. More recently, there is an increasing level of awareness in the healthcare industry that organizational, managerial and human factors rather than just individual's technical failures are the major causes of harm and accidents [12-16]. Many factors that influence safety, including interpersonal communication among workers, teamwork, recognition of stress and attitudes toward safety are essentially systemic [15,17,18]. Thus, patient safety culture (PSC) is the "shared values, attitudes, perceptions and patterns of behavior that determine the observable degree of effort with which organizational members direct their attention and actions towards minimizing patient harm" [19,20]. An organization

with a positive PSC accepts the inevitability of error; proactively work to prevent it; learn lessons from errors when they unavoidably occur; and continuously improve the organization's ability to ensure patients receive the safest possible care [15].

A culture of safety is known to be associated with clinical outcomes [19,21], hence assessing the culture of patient safety of a healthcare institution can provide a picture of the performance and quality of care from such organization. Although, the measurement of PSC is advantageous and a necessary step towards improvement, actual interventions to improve PSC could be a herculean task due to the intricate nature of healthcare institutions and the complexity of PSC [18,22,23].

Efforts to measure safety culture, other dimensions relevant to organizational performance and clinical quality have led to the development of a number of instruments. One of such tools is the ambulatory version of the Safety Attitude Questionnaire (SAQ-AV) which has been widely validated in different settings and found to be valid and reliable for measuring the construct of PSC [24-26]. Despite the progress in the measurement and improvement of PSC in other settings, it is still an under-researched subject in the Nigerian health care setting. This study was designed to compare and determine the clinical and socio-demographic predictors of PSC among clinical staff involved with ambulatory primary and tertiary care in the south-south zone of Nigeria.

## Methods

### Setting

The study was carried out at the Federal Medical Centre (FMC), Yenagoa in Bayelsa state and 12 Primary Health Centers (PHCs) in Obio-Akpor, Rivers state. All the facilities were public and located in urbanized settings in the capital territories of the two contiguous states in the south-south geopolitical zone of Nigeria. The FMC is a tertiary hospital facility located in Yenagoa, which provide primary, secondary and tertiary health care to the teeming population of Bayelsa State and also has parts of Rivers and Delta state as its catchment area [27]. While FMC is a Federal government-owned and managed health care institution with about 350 functional beds, all the PHCs are administered by sub-national government through the Primary Health Care Management Board (PHCMB).

### Study design

This study is a comparative cross-sectional study.

### Sample size calculation

This study was powered to detect a 5% difference in scores on a 5-point PSC scale (1-5) between primary and tertiary level facilities with a confidence of 95%. A minimum sample size of 32 per level of facility was required when the 5-point response scale is used as continuous data:

$$n / group = \frac{2x(Z_{\alpha} + Z_{\beta})^2 * s^2}{\delta^2}$$

Where  $Z_{\alpha}$  = value for alpha of 0.025 in each tail (1.96);  $Z_{\beta}$  = 0.84 (equivalent to 80% statistical power);  $s$  is the estimate of the

standard deviation in the population = 1.25 [for 5-point scale is calculated by 5(inclusive range of the scale) divided by 4 (number of standard deviations that included about 98% of the possible values in the range)];  $\delta$  = acceptable margin of error for mean estimated as 0.25 [number of points on primary scale (5) \* acceptable margin of error (0.05)] [28].

### Sampling method

Allocation of participants to PHC was done disproportionately among the 12 randomly selected PHCs. The nominal rolls of staff on duty were used in the final random recruitment of staff who participated in the study.

### Study procedures

All clinical staff in the participating facilities was eligible to participate so long as they are available and willing to participate. The categories of clinical staff in these facilities include doctors, nurses, medical laboratory scientists/technicians, pharmacists, pharmacy technicians, community health practitioners (community health extension workers, community health officers), physiotherapists, optometrists, nutritionists etc. The cadres of these staff include; interns, officers, senior officers, principal officers, chief officers. However, some doctors in FMC had comparable ranking as registrars, senior registrars and consultants.

The study used the ambulatory version of the Safety Attitude Questionnaire (SAQ-AV) which was developed by Bondevik, et al, [29]. The SAQ-AV has 62 items with 9 negatively worded statements all under eight domains:

- Teamwork climate - quality of perceived collaboration between personnel;
- Safety climate - perception of how strong and proactive the Centre is committed to safety;
- Job satisfaction - positivity with work experience.
- Stress recognition - acknowledgement of how stressors influence performance;
- Perception of management - approval of managerial action;
- Working condition - perception of the work environment and logistical support.
- Ambulatory process of care - effectiveness of the referral process, adequacies in prescriptions.
- 'Others' - items relevant to PSC but not part of earlier domains.

The SAQ-AV was validated through expert reviews and pre-test among clinical staff. This processes assured the content validity and comprehensibility of the items. Participants rated their agreement on the 62 items along the 5-point Likert scale: 1 = disagree strongly, 2 = disagree slightly, 3 = neutral, 4 = agree slightly, 5 = agree strongly. Additional section was created to capture participants' socio-demographic and clinical characteristics. The internal consistency of the domains and the entire scale was determined by their Cronbach's alpha.

**Table 1:** Demographic characteristics of the study respondents.

Characteristics	Frequency (%)
Practice level	
Primary	231 (53.0)
Tertiary	205 (47.0)
Gender	
Male	184 (42.2)
Female	252 (57.8)
Job status	
Contract	111 (25.5)
Permanent	325 (74.5)
Professional group of respondents	
Doctors	67 (15.4)
Nurses	119 (27.3)
Laboratory staff	70 (16.1)
Pharmacy staff	56 (12.8)
CHP	80 (18.3)
Support staff**	42 (9.6)
Age in years	
25 years or less	44 (11.0)
26 - 40 years	301 (73.3)
More than 40 years	55 (13.7)
Years of experience	
5 years or less	222 (53.4)
6 - 15 years	158 (38.0)
More than 15 years	36 (8.6)
Years worked in hospital	
5 years or less	338 (81.4)
6 - 15 years	70 (16.9)
More than 15 years	7 (1.7)

\*\*Support staff consists of all other professional disciplines that met the criteria for the study but did not individually meet 10% of the total respondent.

**Table 2:** Descriptive situational analysis of PSC along SAQ-AV domains in all facilities.

SAQ-AV Domain	% with Positive Score	Mean Score (SD)	Minimum	Percentile (%)			Maximum
				25	50	75	
Teamwork	81.2	84.0 (16.7)	10.0	75.0	85.0	100.0	100.0
Safety climate	71.3	80.4 (16.9)	12.5	70.8	83.3	92.7	100.0
Perception of Mgt	55.0	73.3 (20.0)	0.0	62.5	75.0	87.5	100.0
Job Satisfaction	81.0	84.3 (15.9)	5.0	75.0	90.0	100.0	100.0
Stress Recognition	25.9	53.1 (23.8)	0.0	37.5	50.6	75.0	100.0
Working Conditions	62.2	75.8 (19.3)	12.5	62.5	81.3	93.8	100.0
Ambulatory Care	68.1	78.3 (20.0)	0.0	66.6	81.3	100.0	100.0
Others	26.4	67.2 (10.1)	32.1	60.5	67.9	75.0	92.9
Entire PSC	41.7	71.4 (10.0)	32.3	65.7	72.9	79.4	90.3

**Data collection**

Data collection was in July and August 2017 and questionnaires were given to all participants to take home, fill and return to the facility at their earliest convenience. Calls were made to remind the respondents of the questionnaire and the need to complete it in a calm and conducive environment. A liaison officer was appointed in the various units to assist in the collection of the completed questionnaire.

**Statistical analyses**

All the negatively worded statements were reversed and recorded (such that higher rating denotes agreement) before ordinal scales were transformed to percentages using the formula:

$$\text{Transformed score} = \frac{[(\text{item score} - \text{minimum score}) / (\text{maximum score} - \text{minimum score})] \times 100}{}$$

A score threshold of 75% and above within the SAQ-AV domains, represented positive perception of PSC. Analysis was done to determine the level of PSC among various categories of health workers and uncover clinical and socio-demographic predictors of PSC using binary logistic regression. All analyses were conducted using the SPSS version 22 statistical package with statistical significance set at a p-value <0.05.

**Ethical Consideration**

Approval for this study was given by the Ethics committee of the University of Port Harcourt. Permission to access the staff of FMC was given by the head of clinical services while the Permanent Secretary of the PHCMB did same for the PHCs.

**Results**

**Participants' characteristics and reliability of instrument**

A total of 436 out of the 812 questionnaires were completed and returned giving a response rate of 53.7%. The response rates from the for the PHC level facilities was 76.5%, and from the tertiary facility was 40.2%. The Cronbach's alpha for the entire scale was 0.91 and that of the various domains were: teamwork climate (0.73), safety climate (0.74), perception of management (0.63), job satisfaction (0.76), working conditions (0.62), stress recognition (0.69), ambulatory process of care (0.72) and others (0.66).

**Table 3:** Local PSC in sections of the tertiary facility.

Section	Teamwork climate	Safety climate	Perception of Management	Job Satisfaction	Stress recognition	Working Conditions	Ambulatory process of care	Entire PSC
	Means PSC score (SD)							
Surgery	80.0 (16.1)	75.4 (18.2)	61.0 (20.2)	77.4 (19.7)	58.2 (21.3)	69.4 (20.9)	70.7 (22.0)	67.8 (10.9)
Ophthalmology	85.5 (9.6)	87.8 (10.1)	70.5 (15.6)	94.1 (7.4)	40.3 (28.6)	79.0 (20.2)	79.7 (21.3)	72.4 (7.1)
Internal Medicine	80.5 (15.2)	73.1 (14.4)	53.1 (16.5)	77.5 (10.1)	61.3 (22.2)	66.3 (21.3)	74.5 (19.8)	67.4 (10.0)
Psychiatry	81.0 (10.2)	72.1 (13.1)	70.5 (15.8)	81.9 (12.4)	67.7 (23.9)	68.3 (18.5)	78.8 (17.7)	67.8 (6.1)
Physiotherapy	81.3 (13.3)	73.8 (16.0)	76.0 (13.4)	87.8 (13.5)	60.9 (20.0)	74.3 (14.7)	51.0 (22.1)	67.3 (8.1)
Laboratory	76.4 (18.5)	72.7 (18.4)	68.0 (18.4)	84.5 (13.4)	48.9 (25.2)	75.2 (16.2)	75.8 (15.6)	67.8 (9.9)
Pharmacy	83.1 (15.7)	79.6 (15.4)	70.4 (21.9)	89.8 (12.1)	60.4 (16.3)	75.5 (18.5)	74.1 (17.7)	72.1 (8.2)
Obs. & Gynae.	70.7 (20.5)	73.0 (17.2)	61.9 (21.2)	76.6 (17.3)	60.5 (21.5)	63.9 (19.9)	62.3 (20.4)	64.3 (11.0)
Paediatrics	90.6 (9.8)	83.1 (10.0)	69.5 (16.5)	87.5 (16.0)	61.7 (23.7)	70.3 (15.9)	73.6 (18.7)	71.8 (9.3)

Obs. & Gynae - Obstetrics and Gynaecology.

The demographic characteristics of the respondents as presented in Table 1 shows more of the respondents coming from the primary practice level (53%, n = 231), female health workers (57.8%, n = 252) and nurses (27.3%, n = 119). Similarly, more respondents were permanent staff, were aged between 26 and 40 years and had worked in their current facilities for five years or less. The community health practitioners were more in the primary centers (n = 67, 29%) than the tertiary (n = 13, 6.3%).

### Assessment of PSC

Table 2 provides information on the summary situation of PSC along all domains of the SAQ-AV. The mean safety attitude scores for stress recognition and the 'others' domain was lower than other domains and their relative contributions brought the weighted mean

of entire PSC to 41.7. Wider variability in the distribution of the safety attitude scores were also observed with 'stress recognition', 'ambulatory processes of care' and 'working condition' domains.

Table 3 considers the local environment of the clinical staff and shows that the mean overall PSC score was highest for ophthalmology (72.4) and lowest for the department of obstetrics and gynaecology (64.3). These patterns were also similar to what is observed along the domains of the SAQ-AV.

The proportion of health workers with a positive perception of PSC along the various domains of the SAQ-AV is presented in Table 4. The disaggregated data shows higher proportion of primary level workers having positive culture of teamwork, safety climate, perception of management, job satisfaction, working conditions, ambulatory process of care than do the tertiary level workers. Table 4 also shows this distribution across other demographic and clinical variables included in this study.

**Table 4:** Proportion of health workers with positive PSC.

Subgroups	Percentage with positive PSC along...								
	Teamwork climate	Safety climate	Perception of Management	Job Satisfaction	Working Conditions	Stress recognition	Ambulatory process of care	Others	Entire Scale
<b>Practice level</b>									
Primary	85	76	65	82	68	23	78	36	49
Tertiary	77	70	44	80	56	29	57	15	33
<b>Gender</b>									
Male	80	69	51	79	60	26	66	27	39
Female	82	73	58	83	64	26	70	26	44
<b>Job status</b>									
Contract	82	78	67	79	67	19	73	31	45
Permanent	81	69	51	82	61	28	67	25	41
<b>Professional group</b>									
Medical doctors	84	73	55	81	63	43	67	30	46
Registered nurses	75	64	40	73	56	26	66	21	34
Laboratory staff	91	79	57	93	64	14	62	12	36
Pharmacy staff	74	67	56	84	57	21	69	30	40
CHP	86	77	63	88	71	23	71	25	46
Support staff**	86	78	71	80	66	24	74	38	53
<b>Age in years</b>									
25 years or less	89	82	68	89	80	5	77	48	57
26 - 40 years	78	68	56	79	60	29	67	25	40
More than 40 years	91	80	55	86	60	27	73	27	47
<b>Years of experience</b>									
5 years or less	80	72	60	83	65	22	70	29	45
6 - 15 years	80	68	51	80	61	32	67	25	38
More than 15 years	89	81	44	81	53	33	61	28	42
<b>Years in current facility</b>									
5 years or less	81	72	57	83	63	28	68	29	45
6 - 15 years	79	73	47	80	67	20	69	20	33
More than 15 years	86	57	43	71	0	57	57	29	14

**Table 5:** Predictors of PSC from multivariate logistic regression analysis.

Independent variable - reference group	Teamwork climate - OR (p-value)	Safety climate - OR (p-value)	Perception of Management - OR (p-value)	Job Satisfaction OR (p-value)	Working Conditions - OR (p-value)	Stress recognition - OR (p-value)	Ambulatory process of care - OR (p-value)	Others - OR (p-value)	Total Scale - OR (p-value)
<b>Practice level -Tertiary.</b>	-	-	-	-	-	-	-	-	-
Primary	2.24 (0.008) **	1.66 (0.056)	2.17 (0.002) **	1.28 (0.418)	1.67 (0.041) *	0.54 (0.025) *	3.65 (0.000) ***	2.60 (0.001) **	1.73 (0.029) *
<b>Gender - Female</b>	-	-	-	-	-	-	-	-	-
Male	0.59 (0.094)	0.61 (0.060)	0.49 (0.004) **	0.62 (0.117)	0.70 (0.141)	0.88 (0.626)	0.72 (0.199)	0.95 (0.854)	0.60 (0.034) *
<b>Job status - Permanent</b>	-	-	-	-	-	-	-	-	-
Contract	0.60 (0.169)	1.10 (0.779)	1.01 (0.962)	0.53 (0.080)	0.81 (0.487)	0.85 (0.635)	0.98 (0.941)	0.63 (0.158)	0.65 (0.143)
<b>Professional group - support staff</b>	-	-	-	-	-	-	-	-	-
Doctors	0.50 (0.333)	0.72 (0.553)	0.74 (0.531)	0.29 (0.124)	1.00(0.992)	6.42 (0.003) **	1.04(0.929)	2.12 (0.233)	1.57 (0.347)
Nurses	0.20 (0.018) *	0.36 (0.053)	0.35 (0.020) *	0.16 (0.018) *	0.72 (0.450)	3.09 (0.062)	0.94 (0.892)	1.38 (0.595)	0.80 (0.621)
Laboratory staff	0.27 (0.060)	0.45 (0.151)	0.79 (0.616)	0.32 (0.161)	0.71 (0.470)	2.67 (0.127)	0.98 (0.967)	1.88 (0.319)	0.96 (0.925)
Pharmacy staff	0.57 (0.447)	0.79 (0.681)	1.28 (0.624)	0.48 (0.383)	1.62 (0.337)	2.39 (0.185)	1.71 (0.297)	1.66 (0.440)	1.75 (0.261)
CHP	0.53 (0.395)	0.59 (0.369)	1.12 (0.824)	0.330.187)	0.86 (0.767)	4.35(0.027) *	0.87 (0.791)	2.65 (0.126)	1.71 (0.283)
<b>Age in years - &gt;40</b>	-	-	-	-	-	-	-	-	-
26 - 40 years	0.30 (0.078)	0.52 (0.203)	0.48 (0.117)	0.47 (0.207)	0.43 (0.098)	1.20 (0.709)	0.31 (0.038) *	0.54 (0.200)	0.37 (0.034) *
25 years or less	0.55(0.487)	0.72 (0.635)	0.48 (0.240)	1.16 (0.861)	0.88 (0.844)	0.20 (0.077)	0.36 (0.148)	1.47 (0.524)	0.64 (0.451)
<b>Experience - &gt;15yr</b>	-	-	-	-	-	-	-	-	-
5 years or less	0.76 (0.774)	0.59 (0.480)	2.56 (0.132)	1.72 (0.488)	2.79 (0.113)	0.68 (0.566)	3.29 (0.086)	1.22 (0.769)	1.42 (0.573)
6 - 15 years	0.90 (0.896)	0.46 (0.271)	1.73 (0.342)	1.41 (0.636)	1.97 (0.258)	1.21 (0.766)	2.54 (0.151)	1.16 (0.812)	1.13 (0.837)
<b>Staff in Centre -&gt;15</b>	-	-	-	-	-	-	-	-	-
5 years or less	1.44 (0.792)	6.49 (0.094)	0.75 (0.785)	2.17 (0.489)	1.01 (0.999)	0.18 (0.173)	1.08 (0.942)	0.33 (0.309)	3.28 (0.335)
6 - 15 years	0.83 (0.899)	6.13 (0.102)	0.72 (0.756)	1.80(0.594)	1.01 (0.999)	0.07 (0.033)	1.56 (0.678)	0.28 (0.234)	1.73 (0.655)

P values (\* = p<0.05; \*\* = p<0.01; \*\*\* = p≤0.001), a - the regression coefficient (B) shows the relationship between subgroups within the independent variable and its baseline or referent group (-)

Tert - Tertiary; CHP - Community Health Practitioners

### Predictors of Positive PSC

Table 5 shows the relationship between each independent variables and PSC (dependent variable) from the bivariate logistics regression. The multivariate logistic regression that controlled for the interactions among the independent variables included in the model showed practice level as a consistent predictor of entire PSC and the various domains. From the Table, working in PHCs is associated with significantly higher odds of having a positive culture of teamwork (OR = 2.24, p = 0.008), perception of management (OR = 2.17, p = 0.002), working conditions (OR = 1.67, p = 0.041), ambulatory process of care (OR = 3.65, p = 0.000) and overall PSC (OR = 1.73, p = 0.029); the reverse was the situation with stress recognition (OR = 0.54, p = 0.025). Staff aged 26 - 40 years were less likely to have an overall positive PSC than those above 40 years and this relationship was significant (OR = 0.37, p = 0.034). This was similarly reported with male clinical staff (OR = 0.6, p = 0.034).

### Discussion

#### Summary of the study

This study used the SAQ-AV to assess the PSC in a tertiary and some PHC facilities in the south-south region of Nigeria. The internal consistency (reliability) of the scale in this local population was good. There was a lower than expected overall level and distribution of PSC in the various work settings studied, a generally low level of ability to recognize stress and a marked variation of PSC between levels of practice.

#### Comparison

The response rate of 53.7% reported in this study was lower than earlier reports from similar studies conducted in Slovenia and the United States but higher than those from Norway and the Netherlands that have used the SAQ-AV [29,30-32]. While this

may be due to the setting, length of the questionnaire and possible low interest in self-audit in the setting of this study, the disparity in response rate between the primary and tertiary levels of practice should raise concerns as this may be related to the workload often experienced in the tertiary Centre. It is known that responding to survey instrument largely depend on the willingness and the ability of the respondents among other factors [33]. The high level of education and experience of these providers means they all have the ability to respond to SAQ-AV questionnaire but some may still not be disposed to do so. There is a need to explore ways of improving the response rate in subsequent assessments as the management of an appropriate PSC would require periodic assessment with a view to entrench a continuous improvement in PSC.

The mean score for PSC was less than 75 and a low proportion of care providers had positive perception of the overall PSC in their work environment. This may be reflective of the absence of a well-articulated PSC policy in most of the health facilities in this environment. It is expected that health organizations with positive PSC should also have adequate mechanisms in place to ensure that patients receive the safest possible care [15]. The quest for quality and safer health care can only be achieved when there is a culture that promotes patient safety and improved quality of care.

An interesting observation was the poor ability for clinical staff in both the primary and tertiary levels of care to recognize stress. Although the significant disparity between them is an indication that improvement is feasible but poor perception of the effect of stressors on the work process undermines PSC [19]. Fortunately, work stress can be managed effectively through regular update on workers' skill and work processes, encouraging social relaxation outside of work, providing adaptive leadership at the unit/department, encouraging self-leadership as well as providing the right quality and quantity of manpower [34].

Good teamwork climate in health institutions are desirable as medical care is inherently interdisciplinary and patient safety is enhanced where clinical staff works together as teams [34]. Staff often shows stronger attitudes to teamwork when working with those in same professional group than with others [34]. This could have resulted from limited interactions among multi-professional clinical staff during and outside official schedules. Indeed, situational factors that force staff to work within the same unit or environment such as exist between doctors and nurses have been reported to improve the teamwork climate. Leisure facilities in PHC facilities are often shared by all staff but this is not the case in the tertiary facility where available leisure facilities are often strictly established for specific professional groups and do not serve as common places for all professionals to meet, network, interact and build stronger team spirit [34].

About half of the overall clinical staff had a positive perception of management. Organizational and managerial factors including effective leadership are required to influence a positive culture of safety for patients as mistrust between the frontline health providers and management may result from poor communication. A positive PSC thrives on communication openness, adequate reporting system, feedback from management and learning from experience [12,15,18,19]. Effort should be made to do away with the existing 'blame' and 'shame' culture in many clinical settings in developing countries. This shift would direct more attention to systemic factors

that could assure safer care. To achieve this, effective leadership in health organizations especially at the tertiary level will engender a harmonious relationship among all the professional groups and ensure that patient safety becomes a right that patient can truly look forward to in Nigeria [35].

Asides the overall PSC, a look at the different work stations reveals discrepancies as high and low PSC was observed in the Departments of ophthalmology and obstetrics respectively. While this support the commonly held notion that 'safety is local', it would be desirable to know how these disparities arose and its association with clinical outcomes in the various departments.

The socio-demographic and job experience of staff had much less impact on PSC than the level of practice. The result of logistic regression which investigated the level of practice associated with positive PSC showed level of practice as the most consistent predictor of PSC along all domains of the SAQ. Staff in PHCs were more likely to show positive PSC (OR = 1.73,  $p = 0.029$ ), interact positively with local management (OR = 2.17,  $p = 0.002$ ) and have a positive teamwork attitude (OR = 2.24,  $p = 0.008$ ) than their counterparts in the tertiary facility. The marked disparity in PSC between primary and tertiary levels is not unexpected in Nigeria where public tertiary health facilities are bedeviled by chronic, persistent inter-professional rivalry [36] that foists a poor safety culture as demonstrated in this study.

The critical role of institutional management in entrenching PSC may require a decentralization of management in the tertiary facility to departments and units which means a shift towards the horizontal organizational structure traditionally found in PHC facilities. This process of decentralization of management and bridging the gap between frontline clinical staff and management could enhance teamwork, communication openness and improve PSC. Similarly, workers will more likely trust and support management that clearly communicate its plan for achieving patient safety and show commitments to the attainment of such laudable goal.

While it sounds logical to expect higher PSC at the tertiary level of practice that parades higher level of skills and sophistication of practice, the reverse was found in this study. A closer examination of the data reveals that the significant variation in PSC is largely attributable to staff perception of management, the work environment, logistical support, ambulatory process of care and the amorphous domain referred to as 'others' rather than personal individual skills and technical sophistication [19].

### Implications of the findings

This situational analysis has a number of implications as it highlighted gaps in PSC along domains of SAQ-AV and provide additional imperative to institutionalize periodic surveys on PSC. Future research should aim to confirm how these variations arose, explore associations between PSC and patient outcomes and suitable interventions to improve PSC in the Nigerian practice setting.

### Limitations of the study

Although this study is one of the earliest reports on PSC in this setting, it has a number of limitations. Firstly, a low response rate was observed especially from the tertiary health facility but there

was partial compensation as the study recruited more participants than required. Secondly, PSC measured in this study was not linked to patient outcomes as such; study could not determine how PSC actually impacts patient outcome in this setting. Additionally, the cross-sectional design limits the use of causal inference from the findings. Lastly, the summation of PSC scores from the domains of SAQ-AV implies that all domains are of equivalent significance and a poor score in one domain could be blurred by a good score in another domain. However, the situation under each domain was highlighted in this study to aid focused intervention and serve as future reference.

## Conclusion

This study which revealed the situation of PSC in primary and tertiary health facilities in this setting is a useful addition to the body of knowledge. Findings call for an improvement in PSC among clinical staff in primary and tertiary health organizations. There is also need to institutionalize continuous assessment of PSC and undertake appropriate interventions that would build a strong positive PSC. Future studies on the subject should also include an investigation of the relationship between PSC and clinical outcomes in this setting.

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