

Evaluation of Patient Safety Culture Practice Amongst Pharmacy Staff in Secondary and Tertiary Hospitals in Benin City, Edo State, Nigeria

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Abstract

Patient medical and medication safety is of paramount interest and one of the major goals of quality healthcare delivery system. The study evaluates patient safety culture amongst pharmacy staff in tertiary and secondary hospitals in Benin City, Edo State, Nigeria.

Data was obtained by administering a validated patient safety questionnaire developed by the Agency for Healthcare Research and Quality (AHRQ). Data was analyzed using Statistical Package for Social Sciences (SPSS), AHRQ data and analytical tool and GraphPad Prism 6. Fisher's exact tests were used to compare the items and composite measure results between UBTH and Central Hospital. A composite score of $\geq 75\%$ was seen as areas of strength, while score of less than 50% indicates areas requiring improvement. The results were considered significant at $P < 0.05$. Teamwork had the highest positive responses for both healthcare facilities, with PSC scores of 84% and 95% respectively for UBTH and Central Hospital ($P = 0.0192$). Reporting patient safety errors, also shows a statistically significant difference ($P = < 0.0001$) and a positive score of (65%), and (23%) for UBTH and Central Hospital. Only Central hospital scored above 75% in areas of communication openness (81.3%), organization learning continuous improvement (78.3%), communication about errors (78.3%), and handoffs and information exchange (78.3%). The positive ratings of UBTH and Central Hospital were 58% and 75%, respectively.

The overall patient safety culture practiced in both hospitals is obviously good. There is higher 'teamwork' amongst pharmacy staff in Central Hospital, while UBTH staff showed better patient 'safety error reporting. The composite measure averages show that both healthcare facilities have the potential for improvement.

Keywords: Patient safety, Patient safety culture, Error reporting, Healthcare facilities, Nigeria.

INTRODUCTION

One of the drug therapies need of a patient in the pharmaceutical care practice, is medication safety. Patient medical and medication safety is of paramount interest and one of the major goals of a quality healthcare delivery system (Sorra & Nieva, 2004). Patient safety is the

“Absence of preventable harm to a patient during the process of health care and reduction of the risk of unnecessary harm associated with health care to an acceptable minimum” (WHO, 2010, WHO, 2021). It is of global and great concern, because the social cost of patient harm has been estimated to be \$20 billion annually, and healthcare costs of between \$35.7 to \$45 billion for hospital-acquired infections alone (James, 2013, Ahsani-Estahbanati *et al.*, 2022).

Patient safety primarily focuses on the routine monitoring of medicines and medical errors, which frequently have a negative impact on health. It has been determined that reducing medication errors is a major national priority. Error reports may concern pharmaceutical items, systems, methods, and professional practice. Nowadays, it is recommended that the details of the operational system should be the primary focus of interventional methods and patient safety failures.

Errors in medicine administration have been seen throughout the whole system, but it is now acknowledged that a sizable percentage of unfavorable situations are preventable (Baker *et al.*, 2004, Ferner *et al.*, 2010). This puts the prevention of therapy-induced adverse events and patient safety culture (PSC) squarely at the center of the role of pharmacists and pharmaceutical services (APA, 2021). PSC influences how healthcare personnel view procedures, standards, and attitudes related to a culture of avoidable mistakes when providing care (Zohar *et al.*, 2007).

It has been demonstrated that improved patient outcomes are correlated with higher patient safety cultures (Mardon *et al.*, 2010). Providing the patient with multidisciplinary care at the lowest possible risk is a key component of quality hospital services (Mutlu *et al.*, 2015). Health professionals' perceptions of the safety culture are often determined through surveys (Colla *et al.*, 2005, Singla *et al.*, 2006). A broad evaluation of the work environment, interactions inside and across teams, professional and hierarchical relationships, and communications are all made possible by these kinds of inquiries. They are able to determine which regions require interventions to be prioritized (Okuyuma *et al.*, 2018).

Although there is little data from low- and middle-income nations, the rate is thought to be higher than in high-income nations because of the detrimental effects of things like scarce resources for diagnostic tests and care availability (Singh *et al.*, 2017). There is little or no data available at various public health facilities, particularly in Edo State, to support this evidence. This study aimed to evaluate patient safety culture practice among pharmacy staffs in tertiary and secondary hospitals in Benin city, Edo State, Nigeria.

MATERIALS AND METHODS

Area of study

This study was conducted at University of Benin teaching hospital (UBTH) and Central hospital, Benin City, Edo State. UBTH is a multi-specialty healthcare provider with a bed capacity of over 900 as of August 2019 and still increasing with a multiplicity of departments offering a wide range of specialized health services to the people of Edo State and the neighboring states such as Delta, Ondo, and Kogi. The hospital is equipped with a well- functioning Pharmacy department with 18 clinical service units and qualified pharmacists to meet the needs of the patients. Central Hospital in Benin City, Nigeria, is a large and modern medical facility that provides comprehensive healthcare services to the residents of Edo State. It has over 500 bed spaces, and offers a 24-hour emergency service, as well as a number of ancillary services such as radiology, laboratory and pharmacy. The study participants

comprised estimated samples of pharmacy staffs (registered pharmacists, pharmacy interns, and pharmacy technicians) who had direct contact with patients in both UBTH and Central Hospital.

Collection of samples

The Census sampling technique was adopted in this study. All pharmacists, pharmacy interns, and pharmacy technicians in direct professional interactions with patients were recruited for the study. A total of 98 pharmacy staff members who met the inclusion criteria were employed. Pharmacy staffs who had worked 6 months or more and who had direct contacts with patients in both healthcare facilities were included, while those absent from work during the survey period were excluded from the study.

Study Design

The study is descriptive cross-sectional hospital-based research aimed at evaluating the patient safety culture practice among pharmacy staffs in tertiary and secondary health facilities in Benin city, Edo State, Nigeria.

Data collection

Data collection was done between November and December, 2023 using a validated Hospital Patient Safety Culture (PSC) version 2, questionnaire developed by the Agency for Healthcare Research and Quality (AHRQ) (Sorra & Nieva, 2004). The instrument comprises of various patient's safety sections, which include unit/work areas, supervisors/managers or clinical leaders, communication, reporting patient safety, patient safety ratings and your hospitals. The survey used both five-point Likert scales (strongly agree to strongly disagree) and frequency scales (never to always) to assess patient safety perceptions, and measures 10 composites. Negatively worded items were reverse-coded. The questionnaire was administered physically to the pharmacy staffs at their various hospitals.

Data analysis

All sorted questionnaires were coded, entered into Microsoft Excel Window 10, double- checked and thereafter transformed into Statistical Package for Social Sciences (SPSS) version 25, AHRQ data entry and analytical tool, and GraphPad Prism 6 for analysis. Fisher's exact tests were used to compare the items and composite measure results between UBTH and Central hospital. The results were considered significant at $P < 0.05$. Patient rating culture scores were also compared for both health care facilities, The percentage of respondents that answered 4 or 5 (agree/strongly agreed or most of the times or always), 3 (neither agree or disagree or sometimes), and 1 or 2 (strongly disagree/disagree or never/rarely) were considered as positive, neutral and negative. A composite score of $\geq 75\%$ were seen as an area of strength, while score of less than 50% indicates areas requiring improvement (Sorra *et al.*, 2016).

Ethical considerations

Ethics approval of research, with Protocol Number: ADM/E 22/A/VOL.VII/14838152179, was obtained from the Ethics Committee of UBTH. Respondents' confidentiality was observed by omitting their names and addresses from the questionnaire.

RESULTS

Socio-demographic characteristics of the respondents in both healthcare facilities

A total of 120 questionnaires were administered at both healthcare facilities, and 101 returned, giving a response rate of 84.2%. Table 1 shows the demographic characteristics and primary

work area of respondents. About 84% of respondents from UBTH and 60% from Central hospital were between 20-29 years old. Half (50%) of the respondents at UBTH, and 60% from Central Hospital were female. The majority (80%) of respondents in UBTH and 55% from Central hospital were single, also, 98.8% of respondents from UBTH and 75% from Central Hospital are Christians. More than half (59.3%) and 65% of respondents from UBTH and Central Hospital respectively, had a minimum (PharmD) degree. About one-third from UBTH (33%) and 30% from Central Hospital were pharmacists. Less than half (27.1%) and 55% of respondents in UBTH and Central Hospital respectively, have worked for over a year. While 51.9% of respondents at UBTH work more than 40 hours per week, 70% respondents at Central Hospital work 30-40 hours per week. Virtually 95% of respondents at both healthcare facilities had direct contact with patients.

Table 1: Socio-demographic characteristics of the respondents

Variables	UBTH n (%)	Central Hospital n (%)
Age(years)		
20-29	68 (84.0)	12 (60.0)
30-39	4 (4.9)	4 (20.0)
40-49	8 (9.9)	3 (15.0)
>50	1 (1.2)	1 (5.0)
Gender		
male	40 (49.4)	8 (40.0)
female	41 (50.6)	12 (60.0)
Marital status		
married single	16 (19.8)	9 (45)
divorced	65 (80.2)	11(55)
separated	-	-
widowed	-	-
Religion	80 (98.8)	15 (75.0)
Christianity Islam	1 (1.2)	5 (25.0)
Traditional	-	-
Qualification	1 (1.2)	-
NCE	2 (2.5)	-
ND	1 (1.2)	2 (10.0)
HND	23 (28.4)	5 (25.0)
BSC/Bpharm	48 (59.3)	13 (65.0)
PharmD	6 (7.4)	-
MSC/Mpharm	-	-
PHD	-	-
Staff position	27 (33.3)	6 (30.0)
Pharmacist	47 (59.0)	11 (55.0)
Intern Pharmacist	7 (8.6)	3 (15.0)
Pharmacy Technician		

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Years of practice		
≤ 1 year	59 (72.8)	9 (45.0)
1-5 years	15 (18.5)	7 (35.0)
6-10 years	3 (3.7)	3 (15.0)
>11 years	4 (4.9)	1 (5.0)
Hours of work per week		
<30 hours per week	11 (13.6)	2 (10.0)
30-40 hours per week	28 (34.6)	14 (70.0)
>40 hours per week	42 (51.9)	4 (20.0)
Direct contact with patient		
No	4 (4.9)	1 (5.0)
Yes	77 (95.1)	19 (95.0)

The item results for both UBTH and Central Hospital

The item results for both UBTH and Central Hospital are shown in Table 2 below. Teamwork had the highest average percent positive score in UBTH, 83.7%, and Central Hospital 95%, respectively. The overall percentage score for supervisor, manager, or clinical leader support for patient safety was above 75% (UBTH 80%, Central Hospital 90%). The majority (90%) of the respondents from UBTH and Central Hospital had their supervisor, manager, or clinical leader seriously considering staff suggestions for improving patient safety. All (100%) from Central Hospital, and almost all (91%) from UBTH reported that their manager supervisor, or clinical leader takes action to address patient safety concerns that are brought to their attention. More than 92% of the respondents from both facilities agreed that they work together as an effective team. Only Central Hospital scored above 75% in areas of communication openness (81.3%), organization learning continuous improvement (78.3%), communication about errors (78.3%), and handoffs and information exchange (78.3%).

Table 2: Responses on Item Results in the two healthcare facilities

ITEM VARIABLES	UBTH		CENTRAL HOSPITAL	
	(%) +ve	(%) -ve	(%) +ve	(%) -ve
1. Supervisor, Manager or Clinical leader Support for patient safety	80.0		90.0	
My supervisor, manager or clinical leader seriously considers staff suggestions for improving patient safety	90	0	90	6
My supervisor, manager or clinical leader takes action to address patient safety concerns that are brought to their attention	91	2	100	0
My supervisor, manager or clinical leader wants us to work faster during busy times, even if it means taking shortcuts	59	20	80	5
2. Teamwork	83.7		95.0	
In this unit, we work together as an effective team	93	5	100	0
During busy times, staff in this unit help each other.	90	5	95	0
There is a problem with disrespectful behavior by those working in this unit.	68	15	90	5

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3. Communication openness	69.5		81.3	
In this unit, staff speak up if they see something that may negatively affect patient care.	79	5	85	5
When staff in this unit see someone with more authority doing something unsafe for patients, they speak up.	59	9	70	5
When staff in this unit speak up, those with more authority are open to their patient safety concerns.	63	2	85	0
In this unit, staff are afraid to ask questions when something does not seem right.	77	11	85	5
4. Reporting patient safety events	65.5		22.5	
When a mistake is caught and corrected before reaching the patient, how often is this reported?	73	6	15	60
When a mistake reaches the patient and could have harmed the patient but did not, how often is this reported?	58	12	30	40
5. Organizational learning-continuous improvement	71.3		78.3	
This unit regularly reviews work processes to determine if changes are needed to improve patient safety	62	20	75	10
In this unit, changes to improve patient safety are evaluated to see how well they worked.	75	6	75	5
This unit lets the same patient safety problems keep happening.	77	12	85	10
6. Communication about error	71.0		78.3	
We are informed about errors that happen in this unit.	64	6	65	5
When errors happen in this unit, we discuss ways to prevent them from happening again.	79	2	85	0
In this unit, we are informed about changes that are made based on event reports.	70	5	85	0
7. Hospital management support for patient safety	59.0		66.7	
The actions of hospital management show that patient safety is a top priority.	79	5	75	0
Hospital management provides adequate resources to improve patient safety	62	15	60	10
Hospital management seems interested in patient safety only after an adverse event happens.	36	26	65	20
8. Responses to error	55.8		70.0	
When staff make errors, this unit focuses on learning rather than blaming individuals.	75	11	90	0
In this unit, staff feel like their mistakes are held against them.	46	32	85	5

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When an event is reported in this unit, it feels like the person is being written up, not the problem.	51	26	70	10
In this unit, there is a lack of support for staff involved in patient safety errors.	51	21	35	25
9. Handoffs and information exchange	51.3		78.3	
During shift changes, there is adequate time to exchange all key patient care information.	44	33	70	20
When transferring patients from one unit to another, important information is often left out.	57	17	80	10
During shift changes, important patient care information is often left out.	53	22	85	5
10. Staffing and work pace	31.8		61.3	
In this unit, we have enough staff to handle the workload.	33	49	75	20
Staff in this unit work longer hours than is best for patient care.	14	70	35	40
This unit relies too much on temporary, float, or PRN staff.	40	30	65	15
The work pace in this unit is so rushed that it negatively affects patient safety.	40	37	70	5

Where +ve = positive response, -ve = negative response

Composite measure results

Table 3 shows patient safety culture composites measure results for both UBTH and Central Hospital. Teamwork had the highest positive responses for both healthcare facilities with a PSC score of 84% and 95%, respectively for UBTH and Central Hospital ($P = 0.0192$). Reporting patient safety errors, also shows a statistically significant difference ($P = < 0.0001$) and a positive score of (65%) and (23%) for UBTH and Central Hospital, respectively. Similarly, handoffs and information exchange had a positive response of 51% and 78% for UBTH and Central Hospital, with a $P = 0.0001$). Lastly, Staffing and work pace showed a positive score of (31%) and (61%) respectively for both UBTH and Central Hospital, with a ($P = < 0.0001$). See details in Table 3 below.

Patient safety rating

Figure 1 represents the patient safety culture rating for both healthcare organizations, with a positive rating of 58% for UBTH and 75% rating for Central Hospital, respectively.

Table 3: Composite measure results for UBTH and Central hospital

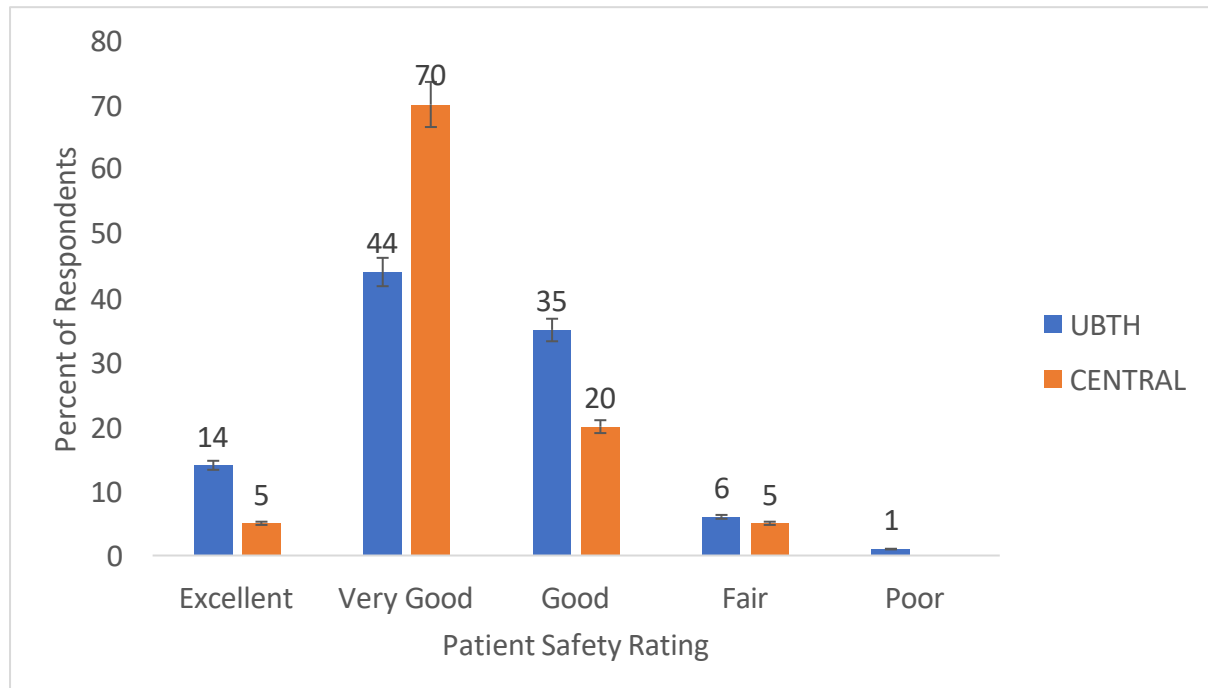
Patient safety culture composite Measure	Percent (%) positive response (UBTH)	Percent (%) positive response (Central hospital)	p-value
Supervisor, manager or clinical leader support for patient safety	80	90	0.0734
Team work	84	95	0.0192*
Communication openness	69	81	0.4815
Reporting patient safety error	65	23	<0.0001*
Organizational learning-continuous Improvement	71	78	0.3304
Communication about error	71	78	0.3304

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Hospital management support for patient safety	59	67	0.3053
Response to error	56	70	0.0566
Handoffs and information exchange	51	78	0.0001*
Staffing and work pace	31	61	<0.0001*
Composite measure average	64	72	0.2886

Where * = statistically significant (p<0.05) at two-tailed confidence interval

Where: Excellence and very good = positive response, Good = neutral response, Fair and



poor = negative response

Figure 1: Patient Safety Rating in both healthcare facilities

DISCUSSION

Most of the respondents in the study from the two healthcare facilities are between 20-29 years old, with majority of them being interns pharmacists. This is lower than that of a related study carried out in Kastina State, Nigeria which reported an age group of 30 – 39 years (Kaware *et al.*, 2022). Half of the staffs in UBTH and 60% from Central Hospital are females, a finding also similar to the observation revealed by previous research (Kaware *et al.*, 2022). The result summary showed that about seventy two percent (72%) of participants from UBTH had worked for less than 1 year, whereas, only forty five percent from central Hospital worked for less than 1 year. About 52% of respondents in UBTH worked for more than forty hours in a week, while 70% from the Central Hospital only worked between 30-40hours per week, this is higher than similar study where 33.3% of respondents reported that they worked over 40 hours per week (Eniojukan *et al.*, (2015) and this may be accountable to larger number of patients visiting UBTH than Central Hospital thereby generally relying on intern pharmacists. The findings indicated that both health facilities had an excellent percentage positive response score only for Supervisors, Managers, or clinical leaders support for patient safety and teamwork. This is consistent with previous study conducted in Delta State, Nigeria (Eniojukan *et al.*, 2015). In addition, respondents from central hospital also had a very good attitude towards communication openness, organizational learning-continuous improvement, communication about errors, handoffs and information exchange, with other areas suggest areas of improvement with respect to patient safety culture practice. However, UBTH staff

only showed good behavior with respect to responses to error, handoffs and information exchange. Moreso, there is a poor response regarding staffing and work pace. Poor staff strength would translate to excessive use of man-power and worn out at work which may lead to inefficiencies, medical errors, use of more floating and unskilled staff, haphazard procedures/cutting corners and longer patients' waiting time. All these are detrimental to ideal culture of safety. These findings are consistent with findings of a study in Anambra State, Nigeria which also reported poor staffing and non-punitive responses to error (Nnebue *et al.*, 2021). These showed, areas of weaknesses and also suggest need for improvements.

Again, participants from Central Hospital demonstrate a very good patient safety culture practice with respect to hospital management support for patient safety, staffing and work pace. These observations depict a well-established culture of safety practices amongst pharmacy staff in the healthcare facility. However, the culture of reporting patient safety events by respondents from Central Hospital was very poor.

The composite measure average positive scores of respondents were 64% and 72 % in UBTH and Central Hospital respectively. This is higher than findings from previous studies conducted in Palestine 51.2% (Hamdan & Saleem, 2013), Ethiopia (46.7%) (Wami *et al.*, 2016, Mekonnen *et al.*, 2016) and Ghana (58.1%) (Akologo *et al.*, 2019). Famolaro *et al.* (2018) in United State, reported 65% overall average percentage positive response. This could be attributed to a more stable healthcare systems experienced lately in the country. Supervisors, managers, or clinical leaders support for patient safety, and teamwork within unit recorded a very high percent positive response at both health facilities, an observation in agreement with other studies previously reported (Akologo *et al.*, 2019; Ogundimu, 2015; Wami *et al.*, 2016; Zahrani, 2018). Teamwork with 94% positive response have been reported from similar study in Taiwan (Chen & Li, 2010). This reflects that pharmacy staffs are more comfortable working together as colleagues in their respective units.

The composite results from Table 3 revealed a statistically significant differences ($p < 0.05$) in four (PSC) composites between the two health facilities, namely; Team work, reporting patient safety error, handoffs and information exchange, staffing and work pace. Reporting patient safety error in UBTH was much higher (65%) than 23% from Central Hospital, and was highly significantly different ($P = < 0.0001$). This could probably be due to UBTH being a teaching and research institute is able to report and document patient safety or medication error, education and training on patient safety and error reporting and also fostering a non-punitive environment where staff feel comfortable reporting errors and near misses. This observation is consistence with the findings of Chen & Li, (2010). However, in Central Hospital, there was higher percent positive PSC dimensions measure (62%) in area of staffing and work pace, compared to UBTH (31%), with $P = < 0.0001$. Central Hospital also showed a higher positive response for handoffs and information exchange, this might be due to better staffing and work pace, lower patient influx at central hospital and consequently, a lower work load, less hours of work and a better teamwork amongst staffs at the hospital. Both healthcare institutions showed positive responses that can be interpreted as either excellence or very good in the other six (6) composites measure.

According to the AHRQ tools for analyses, the percentage mean score (PMS) that is, (composite measure average) is given by total number of positive responses divided by total number of items in each dimension. A PMS $\geq 75\%$ indicate area of strength, PMS of 50-75% suggest potential for improvement and PMS $< 50\%$ depicts area of weakness. The composite measure average for UBTH was 64%, this is same as the average positive response rate

obtained from a similar study (Chen & Li, 2010). The composite measure average score for central hospital was 72%, this is in contrast to a lower mean response rate of 50.5% obtained in research conducted in Iran (Azami-Aghdash *et al.*, 2015), meaning that both healthcare organizations have potential for improvement.

The study revealed that 58% of participants from UBTH evaluate their hospital's PSC status as 'excellent/very good'. A similar study carried out in Iran showed that 41% of participants judged their PSC practice as 'excellent/very good' (Azami-aghdash *et al.*, 2015). Whereas Central Hospital has seventy five percent (75%) of respondents who rated their PSC status as 'excellent/very good'. This is in contrast to a lower rating by a study in Lebanese hospital, which demonstrated that about 70% of participants evaluated their PSC status as 'excellent/very good' (El-Jardali *et al.*, 2010).

CONCLUSION

The study reveals that the overall patient safety culture practice for both hospitals is obviously good. There is higher 'teamwork' amongst pharmacy staffs in Central hospital, while UBTH staffs showed a better patient 'safety error reporting'. Also, Central Hospital had better positive responses with respect to 'handoffs and information exchange', 'staffing and work pace'. Both healthcare facilities have apparently good responses in other six (6) areas of the composite measure. The composite measure averages showed that both healthcare facilities have the potential for improvement. Continuous training and retraining programs should be regularly organized on safety related issues to enhance knowledge and practice of PSC;

The study is however not without limitations, the use of cross-sectional design in the survey fails to determine causal associations and true mediation between the variables (socio-demo- graphic characteristics). Therefore, further studies are required to accommodate this limitation in order to establish the links between these variables and patient safety culture practice. The response may not be free from recalled bias, since responses generated were solely from the study participants.

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