



## **Factors Affecting Communication and Teamwork in the Operating Theatre Towards Improving Quality Care for Patients in Ahmadu Bello University Teaching Hospital, Shika, Zaria**

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### **Abstract**

Communication brings about transformation and it serves the mainstream of patient care. Collaborative teamwork has dominated the field of healthcare and a single healthcare provider cannot achieve the continuous and overwhelming surgical care process unaided. Lack of effective communication and teamwork among perioperative team members over the past has culminated into surgical errors. A cross-sectional descriptive design was used to determine the factors affecting communication and teamwork in the operating theatre in Ahmadu Bello University Teaching Hospital, Shika Zaria. A total of 159 (124 doctors and 35 nurses) respondents were proportionately selected from each cluster for this study using a simple random sampling method. Out of 159 questionnaires administered, 116 were completely filled and analyzed, given a response rate of 73%. The main findings of this study established that the lack of joint training among team members (64%) was identified as the perceived problem associated with teamwork and communication. The other factors affecting communication include: lack of information and structural barriers (70%), disruptive behaviours (66%), fragmented communication (65%), misinformation and lack of clarification (63%) and teamwork hospital policies (84%), variance in communication style (79%), multiple responsibilities (78%), failures in monitoring all the team members (77%), different levels of discipline (74%), and work environment (74%). A good number of the respondents rated the overall communication and teamwork experience among the surgical team members as been fair. Years of experience as a surgical team member ( $p = 0.010$ ) and the participants profession ( $p = 0.020$ ) had a significant association with communication and teamwork. In conclusion, the study identified several factors affecting communication and teamwork in the operating theatre. This study reiterated the significance of communication, and teamwork in the operating room as it demonstrates a positive relationship with the use of WHO safety checklists as an instrument towards improving the quality of surgical patients care.

**Keywords:** *Communication, Patients, Perioperative team, Teamwork*

## Introduction

Communication is a means of bringing about transformation and the mainstream of patient care in the healthcare setting (Kalpathy, 2018; Jonathan, 2009). It is a fundamental instrument in the function of a team, improving patient safety and the need to form interaction and understanding between healthcare professionals' clients centre relations on quality patients' care in the operating theatres (Wauben, Dekker-van, Doorn-van, Wijngaarden, Goossens, Huijsman *et al.* 2011). Teamwork is conventionally modelled on multidisciplinary practices, diverse system and is multifaceted, which include different cultures, different languages, educational and clinical backgrounds (Higgins & McIntosh, 2010). Effective communication and teamwork are essential to ensure patient safety in the operating theatre. Sydor, Bould, Naik, Burjorjee, Arzola, Hayter *et al.* (2012), reported that this could be threatened if status asymmetry between team members were not addressed. Communication failures are the leading cause of inadvertent patient harm. The Joint Commission for Hospital Accreditation documented that the primary cause in over 70% of patient errors was a communication failure. The impact of these occurrences accounted for two-thirds of these patients death (Joint Commission on Accreditation of Healthcare Organizations, 2017). Higgins and McIntosh (2010), stated that effective interdisciplinary communication is an essential pre-requisite for cohesive teamwork in surgery. The absence thereof leads to devastation in patient safety. Manser (2009), asserted that teamwork is easier to develop if a healthy relationship exists between expatriate and local perioperative nurses. Therefore, performing safe surgery relies on the ability of surgical team members to combine professional knowledge and technical expertise with non-technical skills (e.g. communication, teamwork, situation awareness, and leadership, decision-making) (Yule, Flin & Paterson-Brown, 2006).

Communication and teamwork in operating theatres have been recognized as an important contributor in providing high-quality surgical care for patients. Hence effective communication and teamwork in the operating theatre is a necessity, not a luxury, better teams have better outcomes (McCulloch, Mishra, Handa, Dale, Hirst, & Catchpole, 2009). Contemporary theatre practice is bounded by the unblemished synchronization of many small tasks that constitute the procedure (Gillespie, Charboyer, Longbottom & Wallis, 2010). Chadwick (2010), stated that peri-operative nurses entering this challenging environment, are prone to face different linguistic, professional and cultural backgrounds. Higgins & McIntosh (2010), stated that this should be addressed in order to promote a successful transition and create a culture of safety with team cooperation and adequate communication. Inversely this misjudged awareness of poor communication skills between the surgeons and nurses could hinder information exchange and teamwork in the operating theatre.

Mastery of both communication and teamwork skills is essential in the operating theatres (Mazzocco, Petitti, Fong, Bonacum, Brookey, Graham *et al.* (2009). However, several factors have been identified to contribute to communication and team failures. Primarily, doctors and nurses are trained to communicate quite differently. Nurses are taught to be very broad and narrative in their descriptions of clinical situations whereas physicians learn to be very concise, and get to the "headlines" quite quickly. Studies on surgical team members reveal different perceptions and experience on communication and teamwork (Makary, Sexton, Freischlag, Holzmueller, Millman, Rowen *et al.* 2010; Wauben, Dekker-Van, Doorn, Wijngaarden-Van, 2011). A multicenter study found that surgeons rated communication and collaboration with nurses higher than the nurses did (Carney, West & Neily, 2010). Similarly, another study from

the Netherlands demonstrated that surgeons held more favourable perceptions of several types of teamwork and communication than other surgical team members (Wauben, Dekker-Van Doorn, Wijngaarden-Van, 2011). Kertesz, Walker and Maliwat-Bandigan (2019), explored events leading to communication and teamwork failure among operating team members with the goal of developing a team checklist that would lead to improved communication and teamwork concluded that communication and teamwork would continue to be a concern in relation to patient safety in the operating theatre.

Greenberg, Regenbogen, Studdert, Lipsitz, Rogers, Zinner *et al.* (2007), and Mazzocco, Petitti, Fong, Bonacum, Brookey, Graham *et al.* (2009), reported multitudes of factors, which affects communication and teamwork and constantly thwart quality care for patients in the operating room. These factors include lack of continuity in and limited access to communication, fragmented and disjointed communication, differences in information, opinion, values, experience, and interests between the operating team members. Others factors are lack of safety culture, lack of utilization of surgical checklist, disruptive and intimidating behaviour common attitude, lack of active listening, emotional intelligence, and conflicts (Weiser, Haynes, Lashonher, Dziekan, Boorman *et al.*, 2010; Borchard, Schwappach, Barbir & Bezzola 2012; Bakalis & Bakola, 2019).

### **Objective of the study**

The main objective of this study was to examine the factors affecting communication and teamwork in the operating theatre in Ahmadu Bello University Teaching Hospital, Shika Zaria

### **Methods and Material**

#### **Research design**

A cross-sectional descriptive design was used, aimed at determining factors affecting communication and teamwork in the

operating theatre in Ahmadu Bello University Teaching Hospital, Shika Zaria.

#### **Study setting**

The Ahmad Bello University Teaching Hospital, Zaria was established in 1967 to serve entire Northern Nigeria and on November 11, 2005, ABUTH was relocated from Tudun Wada Zaria to its permanent site in Shika Zaria. The study was conducted in ABUTH operating theatres and the hospital has following theatres: Modular, Accident and Emergency, Delivery Suit, Daycare and Ophthalmic theatres.

The Modular Theatre is a notable part of the hospital with five operating rooms each with its dedicated anaesthetic room, scrub room and preparation room. Other facilities such as dirty utilities, storage rooms and exit bays. The theatre treat (both adults and paediatrics) across the following range of specialities surgeons comprising of General surgery, Ophthalmic, Maxilo-facial, Urology, Plastic and reconstruction, Cardio-thoracic, Ear, Nose and throat, Paediatric surgery, Obstetrics and gynaecology surgery with an average of 50 different types of surgeries in a week. The accident and emergency, delivery suit theatres handle emergency and caesarean section surgeries while Dare care take care of outpatients who needs local anaesthetic procedures respectively.

#### **Population for the Study**

The population for this study were 271 surgical team members comprising Perioperative nurses (44), anaesthetists (15), surgeons comprising of General surgery, Ophthalmic, Maxilo-facial, Urology, Plastic and reconstruction, Cardio-thoracic, Ear, Nose and throat, Paediatric surgery, Obstetrics and gynaecology surgery and Anaesthesiologists (212) all working in the operating theatres of ABUTH Shika Zaria.

#### **Sample size**

A sample size of 159 surgical team members was calculated using an online sample size calculator software. The input criteria, for the

sample size estimation, was set at a confidence level of 95 percent, confidence interval of 5 and a population of 271 accordingly. The sample size calculator available at: [www.surveysystem.com](http://www.surveysystem.com) and accessed on 1<sup>st</sup> December 2017.

Here is the formula used in our Sample Size Calculator:

Sample Size

$$Z^2 * (p) * (1-p)$$

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$$c^2$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice expressed as a decimal

(.5 used for sample size needed)

c = confidence interval expressed as a decimal

Sample size for two groups =

Sample size X total population for each group

Total population for the study

Hence, sample size for doctors =  $\frac{159 \times 212}{271} = 124.4$  approximately 124

For nurses =  $\frac{159 \times 59}{271} = 34.6$  approximately 35

The proportion of doctors is 75 percent while that of the nurses is 25 percent respectively.

Therefore, sample size = 124 + 35 = 159.

### Sampling technique

Sampling was by cluster and simple random sampling methods. Grouping of the surgical

teams was by profession thus, doctors and nurses were done. Consultants' surgeons/anaesthesiologists, Senior, and junior registrar doctors (surgical trainees) were clustered as doctors and perioperative nurses and nurse anaesthetists were clustered as nurses.

A total of 124 doctors and 35 nurses were proportionately selected from each cluster for this study using a simple random sampling method.

### Instrument for data collection

A structured questionnaire developed by the researchers was used for the collection of data which contained close and open-ended questions with 5 and 3 Likert scale items ranging from 'strongly agreed, agreed neutral, disagreed and strongly disagreed', 'good, fair, and poor' and 'satisfied, dissatisfied and neutral' were used. The questionnaire comprises of five sections containing information on socio-demographic variables and factors affecting communication and teamwork in the operating theatre.

### Method of data analysis

Data obtained were edited, coded, and entered into SPSS (Statistical Package for the Social Science *Version 19.0*) for analysis. The socio-demographic variables and other variables of interest were presented in frequency and percentages tables, and charts.

### Ethics consideration

Ethical approval was obtained from the Health Research Ethics Committee of ABUTH Shika-Zaria and informed consent was obtained from the study participants.

### Results

#### Response rate

Out of 159 questionnaires administered only 116 were completely filled and used for analysis giving a response rate of 73%.

**Table 1:** Socio-demographic characteristics of the respondents.

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	78	67.2
Female	38	32.8
	n=116	100.0
<b>Age (Years)</b>		
20 – 30	37	31.9
31 – 40	60	51.7
41 – 50	15	12.9
51 and above	4	3.4
	n=116	100.0
<b>Profession</b>		
Medicine	81	70.4
Nursing	34	29.6
	n=115	100.0
<b>Years of work experience as a surgical team member</b>		
less than 1 year	28	24.1
1 - 5 years	50	43.1
6 - 10 years	24	20.7
11 - 15 years	7	6
16 - 20 years	2	1.7
21 and above	5	4.3
	n=116	100.0

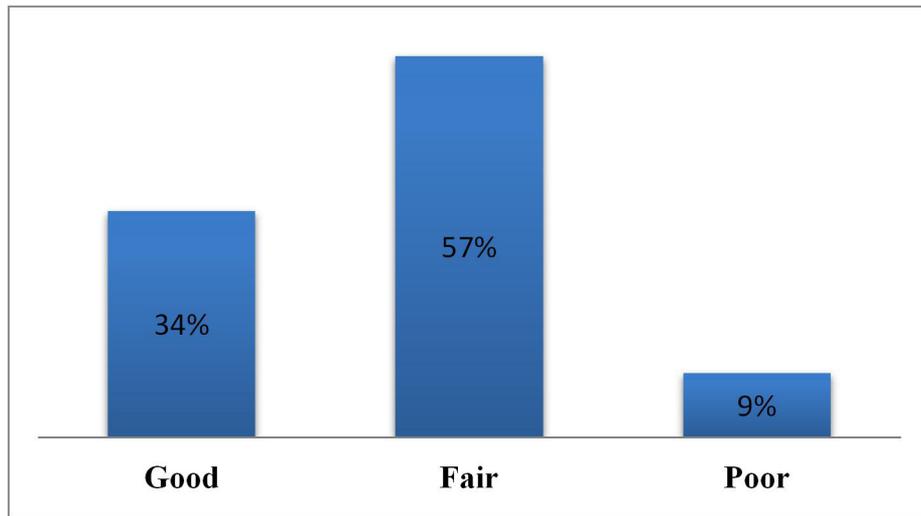
The socio-demographic characteristic of the respondents is presented in Table 1. Findings revealed that about two-thirds (67.2%) of the participants were males and more than half (51.7%) of them were between the age of 31 to 40 years. The Table also indicates that

more than two-thirds of the respondents (70.4%) were doctors while (29.6%) were nurses. Almost half, (43.1%) of the respondents had between 1-5 years of experience as surgical team members.

**Table 2:** Perception of the surgical team members about communication and teamwork

<b>Problems</b>	<b>Yes (%)</b>	<b>No (%)</b>	<b>Unsure (%)</b>
Any sense of team spirit among surgical team members	88 (75.9)	11 (9.5)	17 (14.6)
Any cohesiveness of the surgical team members while performing their duties	83 (71.6)	10 (8.6)	23 (19.8)
Is there teamwork spirit and effective communication among the surgical team members	80 (69.0)	23 (19.8)	13 (11.2)
Does the team member have any clear idea of what is the responsibilities of each team member	70 (60.3)	28 (24.1)	18 (15.5)
Any joint training on teamwork and communication with other team members	31 (26.7)	74 (63.8)	11 (9.5)

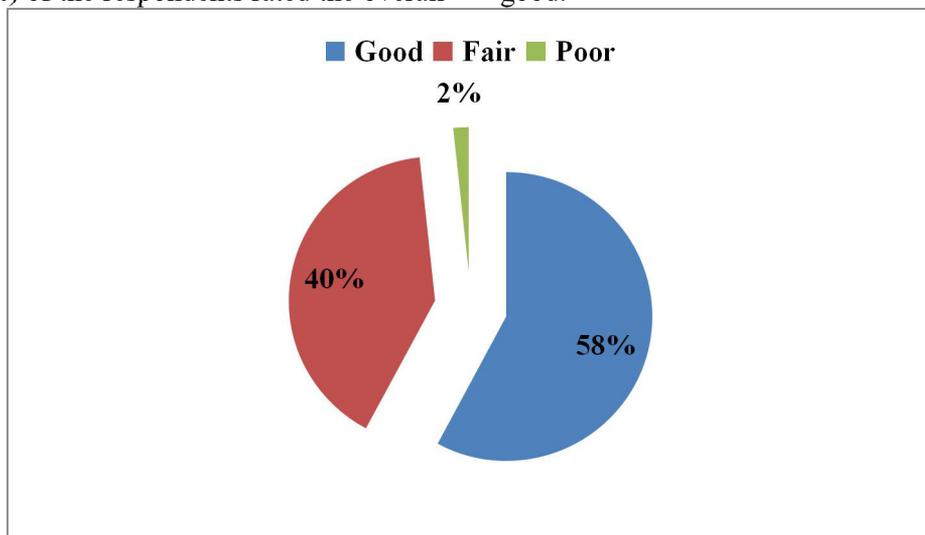
Table 2 shows that, lack of joint training on teamwork and communication among the team members (64%) was identified as the perceived major existed problem associated with teamwork and communication.



**Figure 1:** *Distribution of participants rating of communication and teamwork*

From the distribution of participants rating about the perception of communication and teamwork (figure 1) deduced that more than half (57%) of the respondents rated the overall

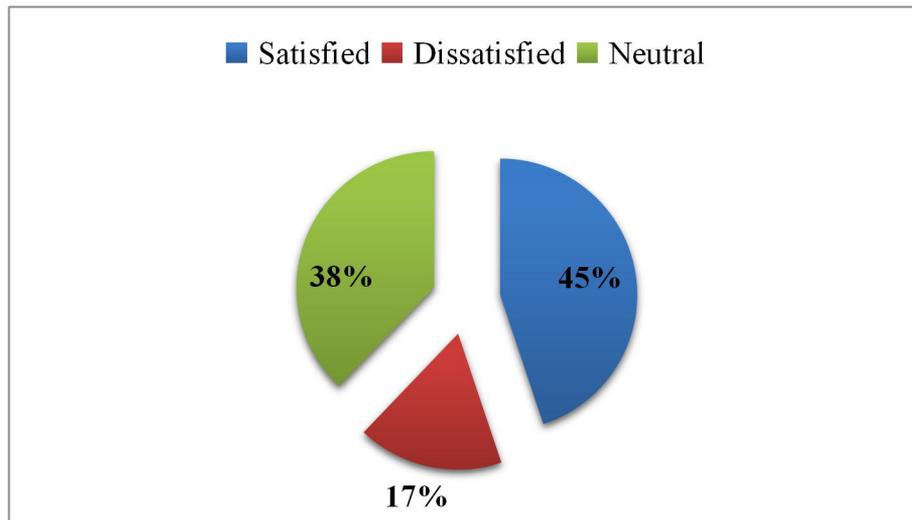
communication and teamwork experience among the surgical team members as been fair, this was followed by (34%) who rated it as good.



**Figure 2:** *Distribution of participants' ability to work as a surgical team member*

The distribution of respondents based on their ability to work as a surgical team member

showed that (58%) of the respondents rated good while (40%) indicated fair (figure 2).



**Figure 3:** Distribution of participants based on the level of satisfaction with the structure of the surgical team.

The distribution of respondents based on the level of satisfaction with the structure of surgical team depicts that 45% of the respondents were satisfied with the structure

of surgical team while a good number of them (38%) also indicated that they were dissatisfied with the organizational structure of the surgical team (figure 3).

**Table 3:** Perceived factors affecting communication among the participants

Factors	*SA (%)	*A (%)	*N (%)	*D (%)	*SD (%)
Lack of information and structural barriers to communications may lead to procedural delays, interruptions and staff member workarounds	81 (69.8)	31 (26.7)	4 (3.4)	0.0 (0.0)	0.0 (0.0)
Disruptive behaviors have a significant effect on communication	76 (65.5)	32 (27.6)	7 (6.0)	1 (0.9)	0.0 (0.0)
Inefficiencies and ineffectiveness occur when communication is fragmented or disjointed	75 (64.7)	36 (31.0)	3 (2.6)	2 (1.7)	0.0 (0.0)
Misinformation and lack of clarification about patient care accounts for surgical errors	73 (62.9)	36 (31.0)	7 (6.0)	0.0 (0.0)	0.0 (0.0)
Undermining culture of safety, affects effective communication	65 (56.0)	32 (27.7)	10 (8.6)	9 (7.8)	0.0 (0.0)

SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Findings on the perceived factors affecting communication among the participants (table 3) showed that majority of respondents strongly agreed that, lack of information and structural barriers (70%), disruptive behaviours (66%), fragmented communication

(65%), misinformation and lack of clarification (63%) and undermining the culture of safety (56%) affects communication among the surgical team members.

**Table 4:** Factors affecting teamwork among the participants

Factors	Yes (%)	No (%)
Hospital policies	97 (83.6)	19 (16.4)
Pressure of work	94 (81.0)	22 (19.0)
Variance in communication style	92 (79.3)	24 (20.7)
Multiple responsibilities	91 (78.4)	25 (21.6)
Failures in monitoring all the team members	89 (76.7)	27 (23.3)
Different levels of discipline	86 (74.1)	30 (25.9)
Work environment	86 (74.1)	30 (25.9)
Lack of respect	78 (67.2)	38 (32.8)
Disruptive and intimidating	76 (65.5)	40 (34.5)
Surgeon personality	71 (61.2)	45 (38.8)
Lack of team familiarity	55 (47.4)	61 (52.6)
Lack of time	35 (30.2)	81 (69.8)

The result of the study as shown in Table 4 indicates that the major factors affecting teamwork among the participants include hospital policies (84%), the pressure of work (81%), variance in communication style (79%), multiple responsibilities (78%),

failures in monitoring all the team members (77%), different levels of discipline (74%), work environment (74%), lack of respect (67%), disruptive and intimidating behaviour (66%) and surgeons personality (61%).

**Table 5:** Factors that improve the quality of surgical patient care among the surgical team members

Factors	Yes (%)	No (%)	Unsure (%)
Utilization of surgical safety checklist in the operating room ensures effective communication, teamwork and promotes safer outcomes and team integration	114 (98.3)	2 (1.7)	0.0 (0.0)
Effective teamwork and communication skills are cornerstones of safe, reliable, and high-quality surgical patient care	113 (97.4)	2 (1.7)	1 (0.9)
Effective leadership, team orientation, efficient communication, adaptability, trust, the shared mental model improves the quality of surgical patient care	113 (97.4)	2 (1.7)	1 (0.9)
Quality patient care is characterized by a good environment, empathy, efficiency, effectiveness and efficacy of surgical team members	113 (97.4)	2 (1.7)	1 (0.9)
Different approaches to issues influence teamwork	97 (83.6)	4 (3.4)	15 (12.9)

Table 6 shows the factors that can improve the quality of surgical patient care among the surgical team. Utilization of surgical safety checklist in the operating room ensures effective communication, teamwork and promotes safer outcomes and team integration

(98%) has the highest frequency, effective teamwork and communication skills are cornerstones of safe, reliable, and high-quality surgical patient care (97%) was next to it, while different approaches to issues influence teamwork (84%) was the lowest frequency.

**Table 6:** Association between selected variables and rating of communication and teamwork

Variables	X <sup>2</sup>	Df	P-value
Gender	6.179	3	0.103
Age in Years	4.833	9	0.849
Years of experience as a surgical team member	30.43	15	0.010
Profession	15.098	6	0.020

Reflected in table 6, the results of the spearman's correlation coefficient analysis shows that years of experience as a surgical team member ( $p = 0.010$ ) and participants profession ( $p = 0.020$ ) had a significant association with communication and teamwork. The analysis also showed a negative correlation between participants gender ( $p=0.103$ ) and age in years ( $p=0.849$ ) with a rating of communication and teamwork.

### Discussion

The result of the study showed that more than half (57%) of the respondents rated the overall communication and teamwork experience among the surgical team members as been fair and lack of joint training on teamwork and communication among the surgical team members (64%) was identified as the major perceived existed problem. This finding was different from the recommendations of several authors when they submitted that training among operating room team members improves operating room efficiency and outcome (Armour, Forse, Bramble, & McQuillan, 2011; Mishra, Catchpole, Dale, & McCulloch, 2008; Phitayakorn, Minehart, Hemingway, Pian-Smith, & Petrusa, 2015). Furthermore, the finding of Sonoda, Onozuka & Hagihara (2017), who reported that it is difficult for surgeons to understand the mental state of an inexperienced nurse during surgery because doctors and nurses seldom have joint training as a dedicated operating room team.

The result on the ability of the team members to work together showed that (58%) of the respondents rated it as good, 45% of the respondents were satisfied with the structure of surgical team. This finding is in agreement with the submission of Hull (2015), where he stated that to provide the best surgical care for the patient, team members must work together,

communicate, and coordinate properly and the importance of training theatre teams to work effectively together is gaining international acceptance as a key strategy to maximize surgical safety. On one hand, the study of Makary, Sexton, Freischlag, Holzmueller, Millman, Rowen *et al.* (2006), revealed that the opinion of the structure and roles of the team varied amongst respondents; some found the team extends beyond in roles and some felt the team was hierarchical. Hitherto another study that was conducted in an operating room environment revealed different perceptions on teamwork depending on the personnel surveyed. For instance, the quality of collaboration and communication as observed by surgeons rating operating room nurse was 87% favourable while operating room nurses rated the surgeon as collaborative was only 48% favourable.

The findings from the questions on the factors affecting communication among the participants showed that majority of the respondents strongly agreed that, lack of information and structural barriers (70%), disruptive behaviours (66%), fragmented communication (65%), misinformation, lack of clarification (63%) and undermining the culture of safety (56%) affects communication among the surgical team members. This finding is supported by Greenberg, Regenbogen, Studdert, Lipsitz, Rogers, Zinner *et al.* (2007), and that, of Mazzocco *et al.* (2009) when they reported that, lack of continuity in communication in the operating room team has the potential to diminish individual and team performance. Hence compromising patient safety, disorderly behaviour which in turns leads to harmful patient outcomes, poor communication, increased risk of death or

major complications, and communication failures cause procedural errors and delays (Greenberg *et al.* 2007; Mazzocco *et al.* 2009).

The study finding indicates that hospital policies (84%) got the highest-rated factor affecting teamwork among the participants, followed by the pressure of work (81%). Others factors include variance in communication style (79%), multiple responsibilities (78%), failures in monitoring all the team members (77%), different levels of discipline (74%), work environment (74%). This finding is consistent with that of Robinson, Gorman, Slimmer & Yudkowsky 2010; Tjia, Mazor, Field, Meterko, Spenard, & Gurwitz 2010; Sevdalis, Healey & Vincent 2007; Sevdalis, Forrest, Under, Darzi & Vincent 2008; Healey, Sevdalis & Vincent 2006; Savoldelli, Thieblemont, Clergue, Waeber, Forster & Garnerin 2010; Cambell, Arfanis & Smith 2012). Where they reported that the biggest factors negatively affecting perioperative workflow efficiencies are lack of effective communications, teamwork, limited access to information, hospital policies and environment. Furthermore, distractions and interruptions have been shown to contribute to the loss of concentration and deterioration of safety in the operating theatre. On one hand, the finding is in line with Studdert, Mello, Burns, Puopolo, Galper, Truog *et al.* (2003) study that revealed that difference in information, opinion, values, experience and interests between a surgeon and anesthesiologist may arise while working in high-pressure environments like ORs may trigger variance.

The finding on the factors that can improve quality of surgical patient care among the surgical team showed that, utilization of surgical safety checklist in the operating room ensures effective communication, teamwork and promotes safer outcomes (98%) has the highest frequency, while, effective teamwork and communication skills are cornerstones of safe, reliable, and high-quality surgical patient care (97%). The results of the spearman's correlation coefficient analysis show that

years of experience as a surgical team member ( $p = 0.010$ ) and participants profession ( $p = 0.020$ ) had a significant association with communication and teamwork but also showed a negative correlation between participants gender ( $p=0.103$ ) and age in years ( $p=0.849$ ) with a rating of communication and teamwork. This finding is in line with Robert (2015) study that, found no correlation between age, gender and academic level and practice of teamwork.

### Conclusion

In conclusion, the study identified several factors affecting communication and teamwork in the operating theatre, which were attributed to lack of information and structural barriers, disruptive behaviours, fragmented communication, misinformation, lack of clarification, hospital, policies pressure of work, multiple responsibilities, failures in monitoring all the team members, different levels of discipline and workplace environment. This study reiterated the significance of communication, and teamwork in the operating room as it demonstrates a positive relationship with the use of WHO safety checklists as an instrument towards improving the quality of surgical patients care.

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### Conflict of interest

The authors declared that no conflict interests exist.

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