Nurse Media Journal of Nursing
e-ISSN: 2406-8799, p-ISSN: 2087-7811
https://medianers.undip.ac.id
12(2):160-171, August 2022
https://doi.org/10.14710/nmjn.v12i2.45933

ORIGINAL RESEARCH

The Pattern of Communication and Teamwork among Operating Theatre Personnel in a State of a Developing Country

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Article Info

Article History:
Received: 24 April 2022
Revised: 29 July 2022
Accepted: 2 August 2022
Online: 31 August 2022

Keywords:
Communication; Nigeria; operating theatre; pattern; teamwork

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Abstract

Background: Effective communication and teamwork is increasingly recognized as an important mechanism for enhancing the safety of healthcare. However, there is dearth of study on the pattern of communication among surgeons, nurses and anaesthetists in South Western part of Nigeria
Purpose: This study assessed the patterns of communication and teamwork among operating theatre personnel and also identified barriers to communication and teamwork in the operating theatre in selected hospitals in Lagos State, Nigeria.
Methods: A descriptive research design was adopted and a convenience sampling technique was used to select 215 nurse and doctor respondents for the study. With a 53-item self-developed structured questionnaire, data were collected. Results were presented descriptively (frequency tables and bar charts), and inferential statistics (Chi-square) were used to test the hypotheses.
Results: Results revealed that 41.9% of the respondents had a fair knowledge of communication and teamwork in the operating theatre. Respondents described their pattern of communication as follows; the majority (99.5%) of the respondents communicate through written, spoken words or visual media, and 99.1% also communicate with other theatre personnel irrespective of their hierarchies. In addition, 90.7% reported that upward communication from patients to surgical team members is common in the theatre, while 87% submitted that they communicate through telephone conversations in this theatre. Individual bias, pressure to complete work, workload, poor leadership/lackadaisical attitudes and conflict of interest were identified as barriers to communication and teamwork in the operating theatre.
Conclusion: The study concluded that the majority of theatre personnel lack adequate knowledge of communication and teamwork in the operating room. Hence, there is a need for periodic training for operating personnel to improve communication and teamwork, and surgical outcomes.

How to cite: Oyediran, O. O., Olafare, O. H., Kolawole, I. O., Ayandiran, E. O., Ojo, I. O., & Fajemilehin, B. R. (2022). The pattern of communication and teamwork among operating theatre personnel in a state of a developing country. *Nurse Media Journal of Nursing, 12*(2), 160-171. https://doi.org/10.14710/nmjn.v12i2.45933

1. Introduction

Interdisciplinary understanding in surgical teams has been broadly researched for years due to stakeholders' concern for the contributions of human factors to patient safety in the operating theatre milieu. Of particular interest has been how the quality, effectiveness, and outcomes of surgical procedures are affected by communication and how attitudes toward teamwork impact the quality and efficiency of surgical interventions (Gardesi et al., 2009). It is evident that although a surgery depends on the technical expertise of the surgeon, the operation itself is a social situation where many tasks that are important for safety in surgery are accomplished through communication and teamwork between the team members. The success of surgical procedures and the safety of surgical patients are dependent on high-quality communication and shared knowledge. This task is challenging to accomplish due to the surgical framework's interrelationship, time constraints, and ambiguity. Surgical team members need not only the clinical knowledge and technical know-how but also the skills to engage in collaboration, understand the complexity of the clinical situation, make apt decisions, and act proficiently (Gardesi et al., 2009).

The perioperative setting is fast-paced and production-driven, pressing time limits and highly sophisticated procedures promote surgical blunders, and these errors significantly contribute to patient harm and death (Penprase et al., 2010). It is well documented that patient safety is boosted when healthcare professionals function as an efficient team. According to Frankel et al. (2007), effective teamwork and well-organized communication skills are the bedrock of safe, reliable, and high-quality healthcare services and when deep-rooted into the daily routine; it improves staff and patient satisfaction while at the same time boosting optimal clinical care outcomes.

It is estimated that about 234 million surgical procedures are performed annually. In developed nations, where 73.6 percent of procedures occur, 3-16 % end in morbidity, and 0.4-0.8 % are fatal (Rose et al., 2015). The majority of surgical errors contributing to morbidity and mortality can be attributed to poor communication and teamwork breakdown. The World Health Organization further reported that problems associated with surgical safety in developed countries account for half of the preventable adverse events that result in loss of life or disability (Domer et al., 2021).

A retrospective appraisal of 16,000 in-hospital deaths found that communication mistakes were twice as frequent as errors due to inadequate clinical expertise (Wilson et al., 1995). A comparative study of primary care physicians suggested that nearly 50% of all detected adverse events were linked to communication problems (Lang et al., 2016). Another previous study stated that communication and teamwork contributed to 43% of errors made in surgery (Ramadanov, 2020). Taken together, teamwork and communication breakdowns were linked with degraded team performance. Hence, they constitute a vital component of good practice and are imperative for safety in surgery (Tørring et al., 2019).

In the United Kingdom, over eight million surgeries were carried out in 2004 alone (more than one operation for every seven inhabitants), with a mortality rate estimated at 20,000 to 25,000 patients (Cain & Ackland, 2013). A survey conducted in Scotland revealed that consultant surgeons expect their trainees to possess a variety of technical skills and important aspects such as application of knowledge, communication and teamwork (Rosen et al., 2018). This establish the fact that most surgical errors even in the developed countries of the world can be prevented with effective communication and good teamwork. Around the world, one million patients die, and seven million are injured due to surgical-related complications yearly (Weiser & Gawande, 2015). In South Africa, a study was conducted to observe communication flow in the operating theatre, and it was concluded that safe and successful surgery demands clear lines of communication, and the most used method for communication is face-to-face to establish that message is well understood (Van As et al., 2011).

Communication plays a crucially important and complex role in the operating theatre. It is shaped by organizational culture, and non-verbal resources are just as relevant for effective communication. The tacit knowledge/skills underlying the use of non-verbal communication could be examined by observing practitioners at work (van den Oever & Schraagen (2021). On the other side, failure of communication within surgical team leads to failure to share vital information with the team, failure to request information from others, or direct information to a particular member of the team and also failure to include patients and their families in communication involving their care. This will be translated to poor documentation, that is not timed, nonspecific, and incomplete and failure to seek input from the surgical patients with subsequent poor surgical outcome and preventable surgical complications (Levinson et al., 2013).

Weiser et al. (2010) observed cases of medical malpractice in surgery, and found that around 70% of adverse events were a result of poor team-communication. In operating theatres, team structure is ambiguous, where surgeons, nurses and anaesthetists may not see themselves as part of one team but three different teams. This affect co-ordination and more importantly prevent the team from communicating effectively and this may lead to conflicting assumptions about how work is distributed and coordinated across the team leading to preventable errors. Also, in a study conducted in Nigeria by Fajemilehin et al. (2016) on safety practices employed by perioperative nurse practitioners in selected tertiary hospitals in south western Nigeria, it was revealed that growing attention is being focused on the safety of surgical patients and quality of surgical care. The authors further submitted that fifty percent of all preventable surgery-related iatrogenic complications have been linked with the interruption in communication, ineffective teamwork, and non-adherence of the surgical team to standard practice regarding sterilization, aseptic technique, and prevention of wrong patient and site. Studies have shown that failures in

communication and teamwork are the causes of 80% of adverse events in surgery like wrong sites, procedures, missing equipment, and delays in surgery.

Effective communication and teamwork are essential for safe, high-quality surgery. However, due to the complexity of surgery and team members with different professional knowledge and skills, some barriers may impede effective communication and teamwork among operating theatre personnel; these barriers include individual bias, language barriers, extreme emotions, lackadaisical attitudes, wrong timing of message, overloading of message, embarrassment and anxiety, status differences, time constraints, conflict of interest, fatigue, values and beliefs, information overload, ego, personal insecurity, stereotyping, noise and privacy (Ali, 2017).

Studies on communication and teamwork patterns among surgical team members are limited and have not been well documented in this part of the developing world despite the importance of such communication to effective team function and the socialization of novice professionals. Accordingly, the present study aimed to determine the patterns of communication among operating theatre personnel and identify barriers to effective communication and teamwork in the operating theatres in selected hospitals in Lagos State of Nigeria.

2. Methods

2.1 Research design

This study adopted a descriptive cross-sectional design to measure the patterns of communication and teamwork among operating theatre personnel in selected Lagos State hospitals.

2.2 Setting and samples

This study was conducted in June, 2021 at the operating theatres of three selected hospitals in Lagos state (Hospital A, B & C). Hospitals A and B are secondary health institutions, while hospital C is a tertiary health institution owned by the Lagos State Government in Nigeria. Hospital A theatre has 7 consultant surgeons, 30 residents, 8 anaesthetists and 14 perioperative nurses; Hospital B has 9 consultant surgeons, 31 residents, 9 anaesthetists and 12 perioperative nurses, and Hospital C theatre has 45 consultant surgeons, 120 residents, 18 anaesthetists and 67 perioperative nurses.

The total population for this study was 370 personnel while the target population for this study was professional operating theatre personnel: surgeons, perioperative nurses, and anesthetists in the three selected hospitals. Inclusion criterium was being members of surgical team who had spent not less than six months in the theatre. Due to the nature of activity scheduling in the theatres, a convenience sampling technique was used to distribute the questionnaires to the respondents that participated in the study.

The sample size was calculated using the Taro Yamane formula from the three selected operating theatres, which was 194 (Sing & Masuku, 2014). The non-response rate of 10% was added to make approximately 215 respondents that the questionnaires administered on them. Samples were selected from the settings as follows: Hospital A: 5 consultant surgeons; 30 residents, 5 anaesthetists, and 15 perioperative nurses; Hospital B: 5 consultant surgeons, 30 residents, 5 anaesthetists and 15 perioperative nurses, and Hospital C: 10 consultant surgeons, 50 residents, 10 anaesthetists and 30 perioperative nurses.

2.3 Measurement and data collection

The instrument for data collection was developed by the researchers following an extensive literature review and was a self-administered questionnaire. It comprises four sections: section A explored respondents' socio-demographic characteristics with 7 questions; section B was a 10-item questionnaire that assessed the knowledge of communication and teamwork among operating theatre personnel. The specific knowledge variables were measured on a Yes/No points scale. One point was awarded for a correct response, while the incorrect response received no point. The minimum score was "0" and a maximum score was "10". Those who scored >7 of 10 points were considered as having 'good' knowledge; those that scored 5 to 7 of 10 points were graded as having 'fair' knowledge, while those that scored <5 of 10 points were graded as having 'poor' knowledge. Section C was on a three-point Likert scale (Agree, Not Sure and Disagree) that determined the patterns of communication among operating theatre personnel. Section D was a 20-item scale with a Yes/No option that identified the perceived respondents' barriers to

communication and teamwork in the Operating Theatre. One point was awarded for a Yes response, while a No response received no point. The minimum score was "0" and the maximum score was "20" points. The mean and standard deviation of the barriers was calculated.

The validity of the questionnaire was established through the face and content validity criteria with content validity index of 0.81. The questionnaire was given to four experts in the field of nursing, education, surgery and psychology to assess the relevance of the subject matter, its scope and the coverage of the study. The ambiguous question was reframed to suit the purpose of the study, while inappropriate words were deleted. The reliability of the instrument was ensured by using the test-retest method. The questionnaire was pretested among 20 Lagos Island Maternity Hospital operating theatre personnel. This relatively small number was used because it abut 10% of the sample size. The co-efficient reliability of 0.72 for each section was found reliable.

Preliminary visits were made to the selected hospitals. A letter of introduction from the Department of Nursing Science, Obafemi Awolowo University, Ile-Ife was given to the gate keeper for permission to access the health facility. Permission letters to collect data were obtained from the management of the hospitals and heads of the departments in charge of the operating theatres where data collection was done. Administration of the questionnaire was done during working day from 8 a.m. to 4 p.m. for a period of 2 weeks. Each facility was visited twice a week for the administration of questionnaires. The questionnaires were given to the surgical personnel during their break after completing first round of surgical procedures. Completed questionnaires were retrieved immediately.

2.4 Data analysis

The data collected was checked for completeness and accuracy before being inputted to Statistical Package for Social Sciences (SPSS) version 25 for analysis. Descriptive (tables, pie charts and bar charts) and inferential statistics were used to present the data. The hypothesis was at a significant level of $p \geq 0.05$ using Fisher exact and Chi-square tests.

2.5 Ethical considerations

Ethical approval for the study was obtained from the ethical review board of Lagos State University Teaching Hospital with a reference number of LSHSC/REC/VOL.II/92. A letter of introduction from the Department of Nursing Science, Obafemi Awolowo University, Ile-Ife, was given to the gatekeeper for permission to access the health facility. Permission letters to collect data were obtained from the management of the hospitals and heads of the departments in charge of the operating theatres where data collection was done; informed consent was obtained from all the respondents before administering the questionnaires. Respondents were politely informed of the purpose of the research and assured that inclusion in the study was out of personal volition. Anonymity was also maintained to enhance confidentiality.

3. Results

3.1 Socio-demographic characteristics of the respondents

Table 1 shows that the majority of the respondents were between the age of 40-49, with a mean age of 40.41(5.56). More than half (59.5%) are female, while 67% are surgeons. Most of them are Yoruba and are Christians by religion.

3.2 Knowledge of communication and teamwork

Table 2 shows that less than two-thirds (62.8%) of the respondents viewed communication as a dynamic process that involves the transmission and accurate reception of ideas accompanied by feedback to foster expected outcomes. About two-thirds (65.4%) confirmed that teamwork could be accomplished through interdependent collaboration, open communication and shared decision-making. The idea that communication and teamwork among surgical team members are needed to make appropriate decisions and act efficiently was agreed upon by 57.5% of the respondents. Finally, more than half of the respondents thought inter-professional communication and teamwork play an essential role in information transfer during surgery and are relevant to patient safety and communication. In addition, teamwork during surgery helps establish and maintain harmonious and productive relationships between health professionals and patients. However, 59.3% of the respondents believed communication and teamwork breakdown could lead to surgical errors.

Table 1. Socio-demographic characteristics of respondents (n=215)

Variables	Frequency (f)	Percentage (%)
Age as at last birthday: Mean(SD)=40.41(5.56)		
20-29	8	3.7
30-39	90	41.9
40-49	104	48.4
50 and above	13	6.0
Gender		
Male	128	59.5
Female	87	40.5
Profession		
Perioperative nurse	44	20.5
Anesthetist (Doctor)	19	8.8
Surgeon	144	67
Anesthetist (nurse)	8	3.7
Years of experience		
1-5	11	5.1
6-10	74	34.4
11-15	96	44.7
Above 15	34	15.8
Grade level		
Grade Level 08-10	23	10.7
Grade Level 12-14	155	72.1
Grade Level 15-17	37	17.2
Ethnicity		
Yoruba	165	76.7
Igbo	35	16.3
Others	15	7
Religion		
Christian	140	65.1
Muslim	75	34.9
Facility of Practice		
Hospital A	54	25.1
Hospital B	61	28.4
Hospital C	100	46.5

3.3 Summary of respondents' knowledge about communication and teamwork

Figure 1 shows that less than half of the respondents (41.9%) had a fair knowledge of communication and teamwork against 31.6% of the respondents with good knowledge of communication and teamwork, with 26.5% with poor knowledge of communication and teamwork.

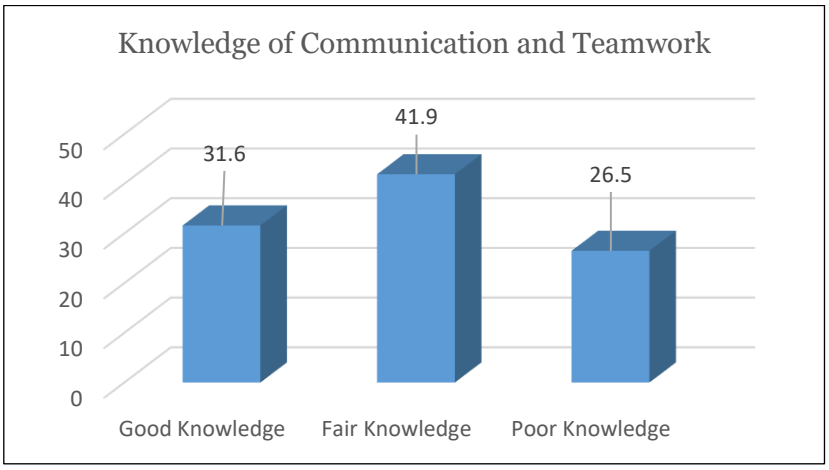

Figure 1. Knowledge of communication and teamwork

Table 2. Respondents' knowledge about communication and teamwork (n=215)

Items	Yes f(%)	No f(%)	Mean(SD)	Rank
Teamwork is a dynamic process involving two or more health professionals with skills and common health goals in assessing, planning and evaluating patient surgical care.	197(91.6)	18(8.4)	1.08(0.28)	1
Communication is a dynamic process that involves the transmission and accurate reception of ideas accompanied by feedback to foster expected outcomes.	195(91.6)	20(9.3)	1.09(0.29)	2
Communication does not take place unless there is an exchange of understanding of meaning.	145(67.4)	70(32.6)	1.33(0.47)	3
Effective communication must be candid, complete, concise, clear, concrete and courteous.	141(65.6)	74(34.4)	1.34(0.48)	4
Teamwork can be accomplished through interdependent collaboration, open communication and shared decision-making.	140(65.1)	75(34.9)	1.35(0.49)	5
Effective teamwork and communication skills are the cornerstones of safe, reliable, high-quality surgical care.	128(59.5)	87(40.5)	1.40(0.49)	6
Communication and teamwork breakdown can lead to surgical errors.	128(59.5)	87(40.5)	1.40(0.49)	7
Inter-professional communication and teamwork are essential in information transfer during surgery and are relevant to patient safety.	125(58.1)	90(41.9)	1.42(0.49)	8
Surgical team members need communication and teamwork to make appropriate decisions and act efficiently.	124(57.7)	91(42.3)	1.42(0.50)	9
Communication and teamwork during surgery helps establish and maintain harmonious and productive relationships between health professionals and patients.	123(57.2)	92(42.8)	1.43(0.50)	10

3.4 Patterns of communication among personnel in the operating theatre

Table 3 shows that a substantial number of the respondents (above 90%) declared that in their theatre, they communicate through written, spoken words or visual media; communication from patients to surgical team members is common, and communication flows regularly from surgical team members to patients; they routinely communicate with one another; they communicate with other theatre personnel irrespective of their hierarchies, also that surgical briefing is routinely done between team members before a surgical procedure and finally collective decision making. However, 78.1% of the respondents were also in agreement that they use body language, touch and paralanguage to communicate with other surgical team members and direct communication without a medium. Almost all (96.7%) of the respondents disagreed with often communicating with professional colleagues only in this theatre, while 93.5% also negated the idea of working alone in their domain. More so, 88.8% of the respondents denied partaking in teamwork with other personnel because it is time-consuming, while 92.6% attributed this to its energy-draining effects, and they could not depend on other professionals to facilitate their tasks (65.1%).

3.5 Barriers to communication and teamwork among operating theatre

Table 4 shows that the major barriers militating against effective communication and teamwork among operating theatre personnel include individual bias (92.6%), noise (83.3%), language barrier (77.7%), workload (88.8%), extreme emotions (80.5%), pressure to complete work (91.6%), status difference/hierarchy (76.7%), conflict of interest (84.2%), ego (78.1%), wrong timing of message (75.3%), inferiority complex (74.4%), overloading of the message (79.1%), poor Leadership/lackadaisical attitudes (87%), over competence (57.7%), over confidence (56.7%), differences in perception (77.2%), lack of trust (79.5%), cultural differences (74%), and lack of training (83.7%).

Table 3. Patterns of communication in the operating theatre (n=215)

Items	Agree f(%)	Not sure f(%)	Disagree f(%)	Mean(SD)	Rank
I communicate through written, spoken words or visual media in this theatre.	214(99.5)	1(0.5)	0(0.0)	1.00(0.7)	1
I communicate with other theatre personnel irrespective of their hierarchies.	213(99.1)	0(0)	2(0.9)	1.02(0.19)	2
Team members together frequently make decisions crucial to patient care.	210(97.7)	3(1.4)	2(0.9	1.03(2.24)	3
Nurses, surgeons and anaesthetists routinely communicate with others in this theatre.	208(96.7)	0(0)	7(3.3)	1.07(0.36)	4
Communication flows regularly from surgical team members to patients in this theatre.	198(92.1)	13(6)	4(1.9)	1.10(0.31)	5
Upward communication from patients to surgical team members is common in this theatre.	195(90.7)	19(8.8)	1(0.5)	1.10(0.35)	6
A surgical briefing is routinely done between team members before a surgical procedure.	199(92.6)	4(1.9)	12(5.6)	1.13(0.48)	7
Telephone conversations aroused to communicate in this theatre.	187(87)	11(5.1)	17(7.9)	1.21(0.57)	8
Direct communication without a medium.	168(78.1)	41(19.1)	6(2.8)	1.25(0.49)	9
I use body language, touch and paralanguage to communicate with other members of the surgical team.	168(78.1)	27(12.6)	20(9.3)	1.31(0.63)	10
I depend on other professionals to facilitate my task.	69(32.1)	6(2.8)	140(65.1)	2.33(0.93)	11
I cannot partake in teamwork with other personnel because it is time-consuming.	19(8.8)	5(2.3)	191(88.8)	2.80(0.58)	12
I cannot partake in teamwork with other personnel because it is energy draining.	10(4.7)	6(2.8)	199(92.6)	2.88(0.44)	13
As a professional, I work in my domain only.	11(5.1)	3(1.4)	201(93.5)	2.88(0.45)	14
There is often communication among professional colleagues only in this theatre	6(2.8)	1(0.5)	208(96.7)	2.94(0.34)	15

Table 4. Barriers to communication and teamwork among the operating theatre personnel (n=215)

Items	Yes f(%)	No f(%)	Mean(SD)	Rank
Individual bias	199(92.6)	16(7.4)	1.07(0.26)	1
Pressure to complete work	197(91.6)	18(8.4)	1.08(0.28)	2
Workload	191(88.8)	24(11.2)	1.11(0.32)	3
Over competence	124(57.7)	91(42.3)	1.13(0.34)	4
Conflict of Interest	181(84.2)	34(15.8)	1.16(0.36)	5
Lack of training	180(83.7)	35(16.3)	1.16(0.37)	6
Noise	179(83.3)	36(16.7)	1.17(0.37)	7
Extreme emotions	173(80.5)	42(19.5)	1.20(0.38)	8
Lack of trust	171(79.5)	44(20.5)	1.20(0.40)	9
Overloading of message	170(79.1)	45(20.9)	1.21(0.41)	10
Ego	168(78.1)	47(21.9)	1.22(0.41)	11

Table 4. Continued

Items	Yes f(%)	No f(%)	Mean(SD)	Rank
Language barrier	167(77.7)	48(22.3)	1.22(0.42)	12
Differences in perception	166(77.2)	49(22.8)	1.23(0.42)	13
Status difference/Hierarchy	165(76.7)	50(23.3)	1.23(0.43)	14
Wrong timing of the message	162(75.3)	53(24.7)	1.25(0.43)	15
Inferiority complex	160(74.4)	55(25.6)	1.26(0.43)	16
Cultural differences	159(74)	56(26)	1.26(0.44)	17
Over competence	124(57.7)	91(42.3)	1.42(0.49)	18
Over confidence	122(56.7)	93(43.3)	1.43(0.50)	19
Masks	71(33)	144(67)	1.67(0.47)	20

As shown in Table 5, none of the socio-demographic characteristics predicted knowledge of communication and teamwork.

Table 5. Correlation analysis of socio-demographic characteristics and knowledge of communication and teamwork

Variables	Knowledge of Communication			χ2	*p-value*
	Poor Knowledge	Fair Knowledge	Good Knowledge		
Age as at last birthday					
20-29	2(40.0)	2(40.0)	1(20.0)	2.42	0.87
30-39	31(34.4)	33(36.7)	26(28.9)		
40-49	32(29.4)	49(45.0)	28(25.7)		
50 and above	3(27.3)	6(54.5)	2(18.2)		
Gender					
Male	18(20.7)	39(44.8)	30(34.5)	0.66	0.71
Female	26(20.3)	64(50.0)	38(29.7)		
Profession					
Perioperative nurse	7(29.2)	10(41.7)	7(29.2)	4.80	0.56
Anesthetist (doctor)	8(42.1)	7(36.8)	4(21.1)		
Surgeon	52(31.7)	67(40.9)	45(27.4)		
Anesthetist (nurse)	1(12.5)	6(75.0)	1(12.5)		
Years of experience					
1-5	4(36.4)	4(36.4)	3(27.3)	1.59	0.95
6-10	29(30.2)	40(41.7)	27(28.1)		
11-15	25(33.8)	29(39.2)	20(27.0)		
Above 15	10(29.4)	17(50.0)	7(20.6)		
Grade level					
GL 08-10	8(34.8)	10(43.5)	5(21.7)	1.47	0.83
GL 12-14	46(29.7)	65(41.9)	44(28.4)		
GL 15-17	14(37.8)	15(40.5)	8(21.6)		
Ethnicity					
Yoruba	65(31.7)	86(42.0)	54(26.3)	0.06	0.96
Igbo	3(30.0)	4(40.0)	3(30.0)		
Religion					
Christian	56(32.9)	69(40.6)	45(26.5)	0.75	0.68
Muslim	12(26.7)	21(46.7)	12(26.7)		

Note. Table 5 shows the Fisher exact Chi-square test used to test the association between socio-demographic characteristics and knowledge of communication and teamwork. As shown in Table 5, χ2 values are more than 0.05 sig. value.

4. Discussion

This study assessed the knowledge and patterns of communication and teamwork among operating theatre personnel and identified barriers to communication and teamwork in the operating theatre in selected hospitals in Lagos State, Nigeria. The study's results revealed that respondents had fair knowledge of communication and teamwork as they agreed that

communication is a dynamic process that involves the transmission and accurate reception of ideas accompanied by feedback to foster expected outcomes, and that teamwork is a dynamic process involving two or more health professionals with skills and common health goals in assessing, planning or evaluating patient care. This finding is in agreement with the findings of studies by Xyrichis and Ream (2008) and Levesque et al. (2018).

From the data collected, the analysis shows that the respondents had a fair knowledge of communication and teamwork in the operating theatre. This finding is in tandem with the study of Fraser and Greenhalgh (2001) who opined that for a successful operation in the operating theatre, theatre personnel must have a good knowledge and understanding of communication and teamwork. The study also revealed that the respondents communicate through written, spoken words, or visual media. This was supported by Frankel et al. (2007) and Lingard et al. (2002) that verbal communication through written, spoken words, or visual media is the most used pattern of communication in the operating room. The respondents also communicate routinely with other professionals in the theatre, as reported in a study of Frankel et al. (2007), which indicated that operating team members routinely communicate with one another to state their perceptions, actions and plans as the surgical procedure progresses. In this study, it was found that the operating team members frequently make decisions crucial to patient care. The finding also corroborates the observations of Lingard et al. (2002) on communication and teamwork events in the theatre, where surgeons, nurses and anesthetists asked questions and made suggestions important about the surgical procedure to achieve their goal.

Furthermore, the study revealed that the respondents often communicate only with their colleagues. This was in tandem with the submission of Norouzinia et al., (2016), who opined that all operating team members, irrespective of their profession and hierarchies, must communicate effectively and make decisions crucial to patient care. In addition to the findings above, the respondents could not support the idea that teamwork consumes time and drains energy. These are supported by Capra (2014) that sharing tasks and working as a team help to save time and conserve energy. Finally, the study showed that factors such as inferiority complex, cultural differences, over competence, over confidence individual bias, pressure to complete work, and workload serve as major barriers to communication and teamwork in the operating theatre. These were also reported in a study by Lingard et al. (2004) when they examined the events leading to communication failures and teamwork among health professionals. Also, Capra (2014) reported that challenges to communication and teamwork come from two sources: from within the team and from the surroundings. The finding is also in agreement with Carney et al. (2010) in their study that analyzed the frequency, root causes, and outcomes of wrong-site and wrong-patient procedures.

In addition, this study also revealed that there is no statistical association between age, gender, profession, years of experience, grade level, ethnicity and religion and knowledge of communication and teamwork among the theatre personnel. This negates the findings of a cross sectional study conducted by Kacholi et al. (2021) in selected regional referral hospitals in Tanzania where gender, years of experience and profession were associated with knowledge of teamwork. The finding is also in disagreement with the result of a study conducted among theatre personnel in the northern Nigeria teaching hospital by Lukong et al. (2020) where age, female gender and years of experience were found to be statistically associated with knowledge of teamwork and communication. This might be due to different in their cultural background and their environment of practice.

5. Implications and limitations

This study has established that the operating room is a highly technical and stressful environment where a patient may be at increased risk for harm. To avoid these preventable harms, communication and teamwork behavior in the operating room are essential for all operating theatre personnel to provide safe and effective surgical care to patients. Therefore, all operating theatre personnel, irrespective of their professional background and hierarchies, must communicate effectively using different patterns of passing information and work as a team to achieve the desired goal of safe surgery for surgical patients. Furthermore, provision of a conducive environment for working to facilitate could smooth communication and teamwork in the operating theatre.

This study has limitations. The theatre personnel's excessive workload prolonged the period of data collection. Another limitation was the relatively small sample for the pilot testing of the instrument. These limitation may limit the generalization of the results of this study.

6. Conclusion

Based on the findings of this study, it can then be concluded that respondents had fair knowledge of communication and teamwork and that most of them of the theatre personnel communicated through through written, spoken words or visual media in the theatre. Inferiority complex, cultural differences, over competence, over confidence were identified as barriers to effective communication and teamwork in the operating theatres. Therefore, the stakeholder must continually engage the theatre personnel in workshops and seminars to improve communication and teamwork among these personnel to improve their knowledge on communication and teamwork as well as removing the barriers to provide safe surgical care and improve surgical outcomes. Furthermore, continuous in-service training of operating theatre personnel is necessary. Further research should be conducted on surgical team members' attitudes towards teamwork and patients' safety in the operating theatre environment.

Acknowledgment

The cooperation and support of the management of the selected hospitals and the theater heads are acknowledged. The contributions of the respondents and the analyst are also well appreciated.

Author contribution

OOO involved in study conceptualization/design, data collection and drafting of the manuscript.
OHO involved in data collection and data analysis.
IOK involved in manuscript drafting.
EOA was involved in critically reviewing the manuscript and proofreading.
IOO was involved in the drafting of the manuscript.
BRF involved in the editing of the manuscript.

All authors have read and approved the final manuscript. All authors met the requirements for authorship, and each author believes that the manuscript represents the honest work of all the contributors.

Conflict of interest

No form of conflict of interest regarding this manuscript.

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