

ACCEPTANCE AND UTILIZATION OF SURGICAL SAFETY CHECKLIST AMONG OPERATING ROOM PROFESSIONALS IN TWO NIGERIAN TERTIARY HEALTH INSTITUTIONS

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Abstract

Studies have shown that adherence to WHO Surgical Safety Checklist (WHOSSC) reduces mortality and surgical complications, but the extent to which it is being accepted and used in South West Hospitals in Nigeria is yet to be established. This study therefore assesses the awareness, perception and utilization of the WHOSSC in tertiary health institutions, South-western Nigeria. Adopting a descriptive cross-sectional design, questionnaire was administered on 105 operating room professionals who formed the sample. The collected data were analysed with descriptive and inferential statistical techniques. Findings from the study shows that 97% of the respondents are aware of the WHOSSC but only 56.1% believe that its inclusion in the care of surgical patients will promote safety and saves time. Further analysis shows that 38.1% of the respondents have utilized the WHOSSC. Factors identified as barriers to utilization of the WHOSSC are lack of training (92.8 %) and sanction by the leaders of health institutions (76.6%). The study therefore concludes that despite the high awareness of WHOSSC among surgical personnel, its acceptance and utilization leave so much to desire.

Keywords: Breastfeeding: Acceptance: Utilization: Surgical Safety: Operating Room.

Introduction

Surgical care is one of the essential health care services provided by the healthcare institution around the world (Weiser et al. 2010). Globally, over 234 million surgeries are performed each year. The World Health Organisation (2008) has it on record that complications occur in 3 – 16 % of all inpatient surgical operations performed in the low-income nations, with death rates of about 0.4 – 0.8% (WHO, 2008). In undeveloped countries, death rates are estimated to range between 5 and 10% for major surgical procedures and this translates to minimum of about 1 million patients' death and 7 million patients' surgical-related complications annually. These complications include wrong patient/procedure/site surgery, anaesthesia equipment problems, lack of availability of necessary equipment, unanticipated blood loss, non-sterile equipment, and retaining of surgical items (for example, sponges) inside patients. Surgery related complications are major sources of morbidity and mortality. Besides, it places a major financial liability on patients and their informal care givers. It is however noteworthy that at least 50% of these complications are preventable (Kable et al., 2002).

The significance of a well-built safety culture and increased patient safety resourcefulness has been a topical issue for many years in the health care institution (Ginsburg, 2013). Ginsburg (2013) states further that safety in surgical care has become a global concern. The launching of the Safe Surgery

Saves Lives Initiative in 2008 by World Health Organisation (WHO) aptly buttresses this concern. The outcome of this initiative results in the development of surgical safety checklist as a means of improving the safety of surgical care around the world. A multinational study involving eight hospitals from diverse economic settings show that its use improved compliance with standards of care by 65 % while reducing the death rate associated with surgery by nearly 50 % (Haynes, et al., 2009). It was equally observed that with its use, all sites recorded a reduction in the rate of major postoperative complications (DeVries et al., 2011).

Since the release of the Surgical Safety Checklist in 2008 more than 3,900 hospitals spanning over 122 countries worldwide have signified their intention to adopt it and over 1800 hospitals have reported using it routinely. It remains however unclear whether African healthcare institutions are inclusive. Of note also is the fact that the practical execution of the checklist has been found to be less than universal and to deteriorate over time. Recently, questions have arisen about its ease of introduction, acceptance and use into workflow arrangements and its exact effect on safety (Conley et al., 2011). Kariyo et al., (2013) submitted that to establish highly successful implementation processes of Surgical Safety Checklist (SSC), every member of the surgical care experts including hospital managers, have to vigorously lead the course of action. DeVries et al.,

(2011) add that there is a need to create an extensive multidisciplinary discussion and communication and arrange update trainings while Hancorn, and Blair (2010) point out the need to offer on-going constructive feedbacks and conduct regular audits.

In Nigeria, the acceptance and regularity of usage of the WHOSSC among Nigerian surgical team is an issue that is still a bit shrouded. This is possibly due to the dearth of studies in this direction in medical scholarship. Consequently, this study sets out to assess the acceptance and utilization of surgical safety checklist in selected tertiary health care institutions in Ogun state, Nigeria. The study specifically assesses the awareness and acceptance of WHO SSC among surgical team in selected tertiary healthcare institutions. It also assessed the level of utilization of WHOSSC and investigates barriers to full acceptance and utilization of WHO SSC among Operating Room Professionals.

Methodology

This descriptive study employed a cross sectional design. The study was carried out at Olabisi Onabanjo University Teaching Hospital (OOUTH), a government owned institution and Babcock University Teaching Hospitals (BUTH), a faith-based institution; both located in Ogun state, Nigeria. Olabisi Onabanjo University Teaching Hospital has four operating suites and performs an average of 3586 surgeries per year. Babcock University Teaching Hospital owned by the Seventh Day Adventist Church, also has four operating suites and performs an average of 150 surgeries yearly.

The two hospitals that formed the bulk of the data for this study were purposively selected. Operating room professionals (Consultant Surgeons, Perioperative Nurses, Anaesthetists and Resident Doctors) formed the target population. Babcock University Teaching Hospital has 56 operating room personnel (20 Surgeons, 6 Surgical Residents, 10 Anaesthetists and 20 Perioperative Nurses) in her employment while Olabisi Onabanjo University Teaching Hospital boast of 69 operating room professionals in her employment (21 Surgeons, 10 Surgical Residents, 18 Anaesthetists, and 20 Perioperative Nurses). Since the study population is not large (population of the operating room professionals in the setting), census was adopted for this study. All the operating room professionals that were available during the data collection period participated in this study. Data were collected through the use of a structured questionnaire that emanated through rigorous literature search. The questionnaire comprises five sections (Sections A to E).

Section A contains items that explored the respondents' socio-demographic variables. Section

B, is 11-itemsscale, assessed respondents' level of awareness of WHOSSC. Options of answer were Yes and No scored as 1 and 0. The lowest and highest scores obtainable are 0 and 11 respectively. A score of 0 – 5 is regarded as 'poor awareness', while a score of 6 – 11 is interpreted as 'good awareness'. Section C, a 10 item that assessed the level of acceptance of the WHOSSC among respondents. It is a 5-point Likert scale ranging from 'strongly agree' to 'strongly disagree' and scored 5 –1 for positive statement and 1 – 5 points for negative statement and summed into a single scale. Section D, also fashioned in 5-point Likert scale format investigated the level of utilization of Surgical Safety Checklist (8 items) by respondents. Responses to items on section D range from 'strongly agree' to 'strongly disagree' scored 1 – 5 points and summed into a single scale. Maximum point and minimum points obtainable are calculated before categorization into high or low acceptance and good or poor utilization respectively. Section containing 7 items with a 'Yes' or 'No' option, examined barriers to acceptance and utilization of WHOSSC. Mean and standard deviation were calculated and same reported accordingly.

The drafted instrument was first subjected to scrutiny by experts in the field of Surgery, Nursing and Education in Obafemi Awolowo University, Ile-Ife that assessed the instrument to see if it looks meaningful, well-constructed and to determine if it is a good measure of the construct to an innocent passer-by. Information gathered from their review was adopted to modify the questionnaire more to establish its face validity. The content validity was achieved through subjecting the subsequent questionnaire to four independent researchers from the fields of Medical Surgical Nursing, Surgery, Demography and Social Statistics to assess its items for suitability, clearness, coverage and significance to the study. The contributions of these scholars were also integrated into the questionnaire. For instance, a few of the items that were recognized as unclear were restructured while those that were noted as recurring were removed. The reliability of the instrument was established by test and re-test technique.

The questionnaire was administered twice at two weeks interval on 10 operating room personnel in Federal Medical Centre, Abeokuta in Nigeria. Their responses were compared and the reliability coefficient was calculated to be 0.85. The study proposal was submitted to the ethical review committee of the two institutions where the study was conducted. After an extensive review the study was granted ethical approval with protocol numbers NHREC/17/12/2013 & BUHREC572 /17. Gate keeper's permission and informed consent were equally obtained before commencement of data

collection. The consent of the potential respondents was obtained and they were treated also with respect, confidentiality of the information they volunteered and anonymity of their persons were ensured. Besides, they were informed that they can pull out from the study at any time without any repercussion.

Preliminary visits were made to the institutions and following obtainment of gate keeper’s permissions and ethical clearance, the research team made repeated visits to the study setting to administer questionnaire on selected respondents. With the support of the theatre heads of the selected hospitals, questionnaire administrations were done after completion of operation list. The research team went to each theatre twice in a week for a period of eight weeks to collect data from the respondents. Data was collected from October, 2017 to January, 2018 (12 weeks). Babcock University Teaching Hospital was visited 6 weeks while Olabisi Onabanjo University Teaching Hospital was visited for another 6 weeks primarily to collect data. Within that period, an aggregate of one hundred and six (116) questionnaires were administered and same were retrieved making 100/84.5% response rate.

Results

The demographic characteristics of the respondents are as presented on Table 1. As reflected on the table, the mean age of the respondents is 31.74years with standard deviation of 6.86. Many of the respondents (38.7%) are between 41 and 50 years of age. A fair majority (57.1%) were female. Distribution of the respondents by occupation shows that nurses are in the majority (44.9%). The table further shows that 27.6% have had between 11 and 15 years of experience

Table 1: Socio-demographic characteristics of respondents

Socio-Demographic Characteristics	N	%
Age at last Birthday; Mean		
Age = 31.74±6.86		
21 – 30	13	13.3
31 – 40	27	27.6
41 – 50	38	38.7
50 and above	20	20.4
Total	98	100
Gender		
Male	42	42.9
Female	56	57.1
Total	98	100
Occupation		
Surgeons	34	34.7
Anaesthesiologists	20	20.4
Nurses	44	44.9
Years of Experience		

1 – 5	26	26.5
6 – 10	21	21.4
11 – 15	27	27.6
16 – 20	11	11.2
21 and above	13	13.3
Total	98	100

Objective one

To find out if respondents are aware of surgical safety checklist.

Table 2 reveals 97% of the respondents are aware of the existence of WHO SSC with 49.5% of the respondents claiming to have heard about it during training course. A majority (96.8%) state that they are abreast of the objective of WHO SSC. Many (52.6%) submitted that the WHO SSC should be used three times before the completion of the surgery. A majority (96.8%) also affirm that all members of surgical team should be present before WHO SSC could be administered. While 52.6% declare that the WHO SSC should be done before induction of anaesthesia and basically surgeon must be present, 85.2% state that time out is second phase of surgical safety checklist. The table further reveal that 89% agree that sign in should be done before induction of anaesthesia and compulsorily the surgeon must be in attendance. Also, FIG 1 shows that more than two third 87.8% of the respondents have good level of awareness and 12.2% have poor awareness level of the Surgical Safety Checklist.

Table 2: Awareness of Surgical Safety Checklist

Variables	N	%
I am aware that there is WHO Surgical safety Checklist		
Yes	95	97.0
No	3	3.0
If yes, through which source		
Publicity	29	30.5
Training	47	49.5
Conference	19	20.0
Do you know the aims of WHO surgical safety checklist?		
Yes	92	96.8
No	3	3.1
WHO SSC should be used for how many time before surgery completion?		
Two time points		
Four time points	35	36.9
Three time points	10	10.5
	50	52.6
All surgical team members have to be on ground before WHO SSC could be administered		
Yes	92	96.8
No	3	3.1
WHO SSC sign out is done after induction and before surgical incision.		

Yes	50	52.6
No	45	47.4
Time out is the second stage of surgical safety checklist.		
Yes	81	85.2
No	14	14.7
Sign in has to be done before induction of anaesthesia and the surgeon must be present.		
Yes	85	89.5
No	10	10.5
Administration of prophylactic antibiotics within an hour before skin incision is part of WHO SSC		
Yes	79	83.2
No	16	16.8
Sign out is done during or instantly after wound closure, before moving the patient out of the operating theatre while surgeon still there		
Yes	81	85.2
No	14	14.7
It is obligatory that when the checklist is being implemented, everyone in the operating room should stop whatever they are doing and listen until it is concluded		
Yes	81	85.2
No	14	14.7

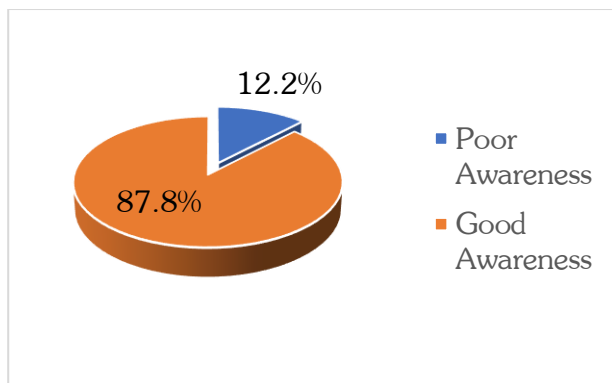


Figure I: Summary of respondents' awareness of WHO surgical safety checklist

Objective two

To examine acceptance of WHO surgical safety checklist

Table 3 shows the acceptance of World Health Organization surgical safety checklist. Less than half of the respondents (46.9%) strongly agree that Surgical Safety Checklist waste a lot of time during surgical procedure. More than half 53% of the respondents disagree that they will be ready to use the surgical safety checklist, while 55.1% disagree that there are many duplications in surgical safety checklist. Also, less than half (47%) strongly disagree that SSC is not necessary to keep the surgical patients safe in the operating theatre, while 68.4% strongly disagree that they will never support the use of the checklist when participating in surgery, 58.2% strongly agree that it is a tool that foster safety of surgical patients. Majority of the study population (78%) strongly agree that they will be in support of the use of the tool in the theatre, while 52.0% strongly disagree with enforcement of the use of surgical safety checklist is unimportant. Also, more than half (55%) of the respondents strongly disagree that they did not see the need for acceptance of this checklist and 37% strongly disagree that it adds to the workload of the operating team. Also, FIG 2 shows the aggregate acceptance of WHO surgical safety checklist. More than half (56.1%) of the respondents report poor acceptance of WHO surgical safety checklist and 43.9% report good acceptance of the checklist.

Table 3: Acceptance of WHO Surgical Safety Checklist

Variables	SA	A	NS	D	SD
Surgical Safety Checklist waste a lot of time during surgery	46(46.9)	40(40.8)	4(4.1)	1(1.0)	7(7.1)
I will be ready to use the surgical safety checklist	0(0.0)	0(0.0)	3(3.1)	52(53.1)	43(43.9)
There are many duplications in surgical safety checklist	1(1.0)	2(2.0)	9(9.2)	54(55.1)	32(32.7)
SSC is not necessary to keep the patient safe in the theatre	1(1.0)	1(1.0)	5(5.1)	45(45.9)	46(46.9)
I will never support the use of the checklist when I am participating in surgery	2(2.0)	0(0.0)	3(3.1)	26(26.5)	67(68.4)
It is a tool that ensure safety of surgical patients	57(58.2)	36(36.7)	1(1.0)	1(1.0)	3(3.1)
I will support the use of this tool in our theatre	76(77.6)	20(20.4)	0(0.0)	1(1.0)	1(1.0)
Enforcement of the use surgical safety checklist is not compulsory	2(2.0)	0(0.0)	7(7.1)	38(38.8)	51(52.0)
I do not see the need for acceptance of this checklist	0(0.0)	0(0.0)	4(4.1)	40(40.8)	54(55.1)
It adds to the workload of the surgical team	3(3.1)	30(30.6)	5(5.1)	24(24.5)	36(36.7)

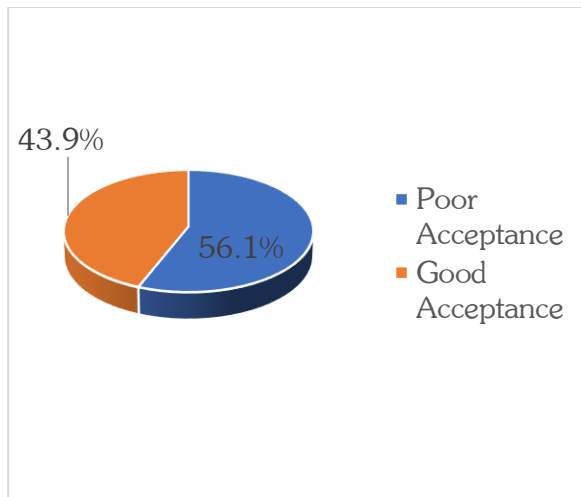


FIG 2: Summary of acceptance of WHO Surgical Safety Checklist

Objective three

Table 4: Utilization of Surgical Safety Checklist

Variables	SA	A	NS	D	SD
Surgical safety checklist is used anytime I am participating in surgery	31(31.6)	26(26.5)	4(4.1)	11(11.2)	26(26.5)
I have not participated in the use of surgical safety checklist at all	22(22.4)	11(11.2)	2(2.0)	10(10.2)	53(54.1)
We usually use surgical safety checklist in this theatre	46(46.9)	14(14.3)	2(2.0)	11(11.2)	25(25.5)
I only advocate use of surgical safety checklist for elective surgery	11(11.2)	11(11.2)	3(3.1)	19(19.4)	54(55.1)
It should only be used for special patients	1(1.0)	3(3.1)	4(4.1)	9(9.2)	81(82.7)
Use of surgical safety checklist in this operating theatre is a taboo	1(1.0)	0(0.0)	2(2.0)	6(6.1)	89(90.8)
Members of surgical team in this theatre have never use surgical safety checklist during any surgical operation	23(23.5)	7(7.1)	4(4.1)	8(8.2)	56(57.1)
I support utilization of surgical safety checklist for all surgical procedures	80(81.7)	12(12.2)	0(0.0)	0(0.0)	6(6.1)

Objective four

To determine the barriers to acceptance and utilization of WHO Surgical Safety Checklist

Table 5 is a presentation of the barriers to acceptance and utilization of checklist as reported by the respondents. More than half (63.3%) of the respondents agree that lack of training is one of the barriers to the acceptance and utilization of checklist. More than half (58.2%) agree that lack of time is a barrier to acceptance and the use of WHO Surgical Safety Checklist, while 69.4% agree that unsuitable time is also one of the obstacles that affect the

To assess the utilization of surgical safety checklist.

Table 4 shows the utilization of surgical safety checklist of the respondents. Less than half (31.6%) of the respondents strongly agree that they utilize surgical safety checklist whenever they are taken part in surgery, while 54.1% never utilize surgical safety checklist when participating in the surgery. At least 47.0% of the respondents have made use of surgical safety checklist in their theatres, while 55.1% and 82.7% strongly disagree that surgical safety checklist should be utilized only for elective surgery and special patients respectively. Although, 90.8% do not see the tool as taboo, but 57.1% have never used surgical safety checklist during any surgery, whereas 81.7% support the usage of surgical safety checklist for all surgeries. The summary of this study shows that the level of utilization of surgical safety checklist is low (38.1%)

acceptance and utilization of checklist. 58.2 % of the respondents agree that absence of key team members also serve as an obstacle to the acceptance and utilization of checklist, 7.1% of the respondents disagree that lack of support from hospital managers can also be an hindrance to acceptance and utilization of checklist. 76.5% agree that lack of sanction is also an obstacle to acceptance and utilization of surgical safety checklist and 44.9% agree that it is because of uncooperative surgical team members.

Table 5: Barriers to acceptance and utilization of WHO SSC

Variables	Yes	No	Mean±SD	Remark
Lack of training	62(63.3)	36(36.7)	0.93±0.25	1
Lack of sanction	75(76.5)	23(23.5)	0.77±0.42	2
Lack of time	57(58.2)	41(41.8)	0.69±0.46	3
Uncooperative team member	44(44.9)	54(55.1)	0.63±0.48	4
Unsuitable time	68(69.4)	30(30.6)	0.58±0.49	5
Absence of key team member	57(58.2)	41(41.8)	0.58±0.49	6
Lack of support from management	91(92.9)	7(7.1)	0.45±0.50	7

Hypothesis

There is no statistical significant association between socio-demographic characteristics of the respondents and acceptance of surgical safety checklist.

Table 6 shows the chi-square test used to test the association between respondents' socio-demographic variables and acceptance of the checklist. As shown

on the table, only the age of the respondents is statistically associated with acceptance of surgical safety checklist ($\chi^2= 10.88, df=3, p=0.01$) with the larger proportion of 63.2% of the respondents between the age of 41-50 have low acceptability for the safety checklist.

Table 6: Association between demographic characteristics and acceptance of SSC

Variables	Acceptance		Total	χ^2	Df	p-value
	Low Acceptance	High Acceptance				
Age at last Birthday						
21-30	6(46.2)	7(53.8)	13(100.0)	10.88	3	0.01
31-40	8(29.6)	19(70.4)	27(100.0)			
41-50	24(63.2)	14(36.8)	38(100.0)			
50 and above	5(25.0)	15(75.0)	20(100.0)			
Gender						
Male	18(42.9)	24(57.1)	42(100.0)	0.03	1	0.86
Female	25(44.6)	31(55.4)	56(100.0)			
Profession						
Surgeon	17(50.0)	17(50.0)	34(100.0)	6.08	3	0.10
Anaesthesiologist	12(60.0)	8(40.0)	20(100.0)			
Nurse	14(33.3)	28(66.7)	42(100.0)			
Others	0(0.0)	2(100.0)	2(100.0)			
Years of Experience						
1-5	9(34.6)	17(65.4)	26(100.0)	4.77	4	0.31
6-10	10(47.6)	11(52.4)	21(100.0)			
11-15	16(59.3)	11(40.7)	27(100.0)			
16-20	4(36.4)	7(63.6)	11(100.0)			
21 and above	4(36.4)	9(69.2)	13(100.0)			

Discussion

This study assesses the acceptance and utilization of the WHO SSC among operating room professionals in two Nigerian teaching hospitals. The study reveals high awareness of the WHO surgical safety checklist among the respondents. This supports Wats *et al.* (2010) finding from their study in the United Kingdom where a majority of the theatre staff in 238 hospitals claim to have heard about WHO SSC. It also buttresses Hurtado *et al.* (2010) report that majority of their respondents know about the existence of the surgical safety checklist.

The present study nonetheless reveals a gap in the respondents' knowledge on when the safety checklist

should be utilized and who should oversee the administration of the tool. This is evident from table 2 where only 50% of the respondents are aware that checklist have to be used before induction of anaesthesia, before knife on the skin (incision) and before the patients will be taken out of the operating room. Again, the submission by many of the respondents that administering prophylactic antibiotics within an hour before incising the skin is a component of WHO surgical safety checklist is totally at variance with the objective of surgical safety checklist. As De Vries, Eiken- Jansen and Hamersma, (2011) suggested, there is therefore a need for extensive multidisciplinary discussion, communication and update training, if the goal of

effective use of surgical safety checklist will ever be attained. This position was equally shared by Bliss (2012) when he states that a structured team training session prior to implementation helps in appropriate use of surgical safety checklist.

Results also show a low level of acceptance of WHO SSC among respondents with many stating that it waste time but it is important to keep patient harmless in the theatre. This contradict Haynes *et al.*, (2011) and Yuan *et al.*, (2012) findings from their study where nearly all their respondents signified acceptance and willingness to use the checklist when participating in surgery. This is also in congruence with Helmio and Aaltonen (2012) findings that a majority of operating room staff admit that the checklist improve safety, prevent error and would want the tool used when performing surgery. Results further shows that a larger percentage of the participants did support the enforcement of the utilization of the surgical safety checklist under the guise that it adds to the workload of the operating room personnel. This in a sense lends credence to Sewell *et al.*, (2011) finding that 20% of the theatre staff are of the opinion that the checklist caused an unnecessary time delay. Taylor *et al.*, (2011) however report that the WHO Checklist took only about two minutes on the average.

As regards the level of utilization of surgical safety checklist, findings from this study show a not impressive usage (38.1%). This study is in agreement with Abdel-Galil (2010) where 5 out of 12 oral and maxillofacial consultants are using the checklist. This is not in consonance with Kearns *et al.*, (2011) observation that there is an average compliance with the use of surgical safety checklist. It also does not corroborate Sivasthasan *et al.* (2010) finding that 99% have heard about the checklist only 65% have utilized the tool and Patterson (2009) submission that nearly half (48.5%) out of the 136 operating room personnel studied report utilization of the checklist lend credence to this finding. This level of utilization may be attributed to fear of being sanctioned the hospital authority despite the poor acceptance of the surgical safety checklist among the study population.

The study further shows that lack of training is identified as the highest barrier to acceptance and utilization of World Health Organization Surgical Safety Checklist by the respondents with a mean score of 0.93 ± 0.25 . This is followed by lacked of sanction and lack of time with a mean score of 0.77 ± 0.42 and 0.69 ± 0.46 respectively. Lack of support from management was ranked as the lowest barrier with a mean score of 0.45 ± 0.50 . This lend support to O'Connor *et al.*, (2013) and Melekic and Getahun (2015) submission that inappropriate

utilization, lack of training, nonattendance of important stakeholders and rushed execution of checklist because of demands from surgeon or anaesthetist are obstacles to acceptance and utilization of the checklist. The identified barriers are also in tandem with those observed by Woodman and Walker (2016) such as confusions concerning how to effectively utilize the checklist, realistic challenges to well-organized workflow, right to resources and person's philosophy and attitude. The results are equally in congruence with Levy (2012) finding that the timing of checklist and inadequate education of the staff is a barrier to the implementation of the checklist.

Conclusion and recommendations

This study has established a high level of awareness of the existence and objectives of WHO SSC among operating room personnel in Ogun state, Nigeria. The acceptance and utilization level of this tool (WHO SSC) among the study population however leave much to desire. Barriers to acceptance and utilization of the checklist such as lack of training, inaccessibility of the tool, short of support and truculent attitude of members identified by this study needs to be addressed.

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