Background: Surgical checklist was introduced by the World Health Organization to reduce the number of surgical deaths and complications. During a surgical conference on “safety in surgical practice,” it was noticed that the awareness and the use of surgical checklist are poor in Nigerian hospitals. This study was aimed at determining the awareness and use of surgical checklist among the theater users in our hospital, factors militating against its implementation, and make recommendations. Methods: This is a prospective study at Ekiti State University Teaching Hospital, Ado-Ekiti; questionnaires were distributed to three groups of theater users – surgeons, anesthetists, and perioperative nurses. The responses were collated by the lead researcher, entered into Microsoft Excel spreadsheet, exported, and analyzed with SPSS. Results: Eighty-five questionnaires were distributed, 70 were returned, and 4 were discarded due to poor filling. The studied 66 comprised 40, 12, and 14 surgeons, anesthetists, and perioperative nurses, respectively. Fifty-five (83.3%) of the responders indicated awareness of the checklist but only 12 (21.8%) correctly stated that the main objective is for patients’ safety and for safe surgery. Major barriers to its use include lack of training 58.2%, lack of assertiveness of staff 58.2%, and that its delays operation list 47.2%. Conclusion: The study demonstrated high level of awareness of surgical checklist in our hospital; however, this awareness is based on wrong premises as it is not reflected in the true aim of the checklist. Majority of the responders would want to be trained on the use of checklist despite the highlighted barriers.

Keywords: Awareness, Nigeria, safety, surgical checklist

Introduction

Worldwide, there are an estimated 234 million surgical procedures performed every year.[1] It has been noted that tens of millions of patients worldwide suffer disabling injuries or death because of unsafe medical care yearly.[2] Many of the injuries are preventable. It has also been found that at least half of all surgical complications are avoidable using the long-standing medical principle of “first, do no harm”. [2,3] The World Health Organization (WHO) introduced Surgical Safety Checklist (SSC) in 2008 to reduce the number of surgical deaths and complications.[4,5] The checklist was also tagged “safe surgery saves lives” initiative which aims to reduce the number of surgical deaths and complications by ensuring compliance with good operating theater practices, by improving team communication in operating rooms, and by empowering all members of the surgical team to flag up concerns.[6] It is intended as a tool for use by clinicians interested in improving the safety of their operations and reducing unnecessary surgical deaths and complications.[4,6] The checklist is based on successful
program which incorporates validated checklists to be reviewed by surgical team before induction of anesthesia - sign in, before skin incision - time out, and before the patient leaves the operating room - sign out.\[4\] Adherence to the checklist program leads to team members working together, communicating well, and can quickly detect avoidable errors thereby leading to reduction in postoperative complications.\[5,7\]

The aim of the study is to ascertain the awareness of surgical checklist among the theatre users in our hospital and to determine the barriers to its implementation and subsequently make recommendations.

**METHODS**

This is a prospective study at the Ekiti State University Teaching Hospital, Ado-Ekiti. The Teaching Hospital is located in South-Western Nigeria. It is a tertiary referral center that caters for the medical needs of Ekiti state and its neighboring states.

This study was done through a designed questionnaire and copies were distributed to three groups of theater users – surgeons, anesthetists, and perioperative nurses. Both consultants surgeon and surgical residents participated and responders cut across dental surgery, general surgery, ophthalmology, orthopaedic, ortholaryngology, obstetrics and gynaecology, plastic surgery, and urology.

Participants were recruited during clinical or departmental meetings to ensure good responses and easy collection of filled questionnaires. The responses were done anonymously and the filled questionnaires were collected by assigned user in each unit, collated, and checked for completion by the lead researcher. The collected information was entered into Microsoft Excel spreadsheet, exported, and analyzed with Statistical Package for Social Science (SPSS Inc., version 16, Chicago, IL, USA).

**RESULTS**

Eighty-five questionnaires were sent out, and we got responses from 70, 66 responses were studied while 4 were discarded because they were not properly filled by the responders. The responders were surgeon 40 (60.6%), perioperative nurses 14 (21.2%), and anesthetist 12 (18.2%), respectively. Forty-two (68%) of participants have worked for 5 years or below. Table 1 shows that 55 (83.3%) participants indicated that they are aware of surgical checklist but only 12 (21.8%) of the 55 stated correctly that the aim is for patient safety and for safe surgery. Table 2 shows 46 (83.6%) of the responders who were aware of the surgical checklist noticed procedures that would have been done correctly if surgical checklist was used. Major barriers to use of surgical checklist includes lack of training 58.2%, lack of assertiveness of staff 58.2%, and the believe that its delays operation list 47.2% as shown in Table 3.

| Awareness                                                                 | Yes | No | No response |
|---------------------------------------------------------------------------|-----|----|-------------|
| Are you aware of surgical checklist                                       | 55  | 11 | 0           |
| If yes: Have you used it before                                           | 36  | 17 | 2           |
| If yes: Where did you use it                                               | 13 - hospitals where trained | 14 - EKSUTH |
| If yes: Have you noticed procedures that would have been done correctly if surgical checklist was used? | 46  | 3  | 6           |
| If yes: Do you know the main objective                                    | 55  | 0  | 0           |
| Only 12 stated correctly that the aim is for patient safety and for safe surgery |

EKSUTH: Ekiti State University Teaching Hospital

| Questions                                                                 | Yes | No | No response |
|---------------------------------------------------------------------------|-----|----|-------------|
| Are you satisfied with the present state of not using it in OR?           | 2   | 51 | 2           |
| Does the checklist improve patient safety?                                | 54  | 1  | 0           |
| Do you think using the checklist improves teamwork in theater?            | 55  | 0  | 0           |
| The use of the checklist should be mandatory for every case?              | 48  | 5  | 2           |
| It causes delay in running the operation list?                            | 26  | 29 | 0           |
| Its implementation is absolutely not necessary in the OR?                 | 5   | 50 | 0           |

Table 1: Awareness of surgical checklist among responders

Table 2: Opinion on surgical checklist

OR: Operating Room
Table 3: Barriers to the use of surgical checklist among the 55 that are aware of surgical checklist

| Barrier                        | Frequency (%) |
|-------------------------------|---------------|
| Lack of training              | 32 (58.2)     |
| Lack of assertiveness of staff| 32 (58.2)     |
| It causes delay in running the operation list? | 26 (47.2)     |
| Lack of time                  | 19 (34.5)     |
| Requirement for signature     | 11 (20.0)     |

**DISCUSSION**

The WHO-SSC has demonstrated efficacy in developed and developing countries alike. Recent increases in awareness of surgical morbidity in developing countries have placed greater emphasis on strategies to improve surgical safety in resource-limited settings.

Our study used questionnaire to find out the awareness of surgical checklist among the theater users in our teaching hospital.

About 68% of the participants in the study have worked for 5 years or below, showing that majority of the theater users are young, training this group of workers is likely to be productive as young professionals are more likely to be willing to learn new techniques. In addition, these professionals are likely to be in the hospital’s employment for a long time and they will be able to transfer the newly acquired knowledge on surgical checklist to incoming staff.

In our study, 55 (83.3%) of the responders indicated that they are aware of the surgical checklist compare to Delgado Hurtado et al. that reported 93.8% awareness of the existence of the WHO-SSC at their center in Guatemala City. They suggested that efforts should be aimed at universal awareness and complete knowledge on why and how the checklist should be used. Fourteen (38.9%) of the 36 participants who claimed to have used surgical checklist responded that they used surgical checklist in our hospital although surgical checklist is currently not in use in our hospital, the fourteen responders could have mistaken the nursing preoperative checklist for surgical checklist. This illustrates the need to train the theater users on surgical checklist. The fact that 83.6% of the responders who are aware of the surgical checklist have noticed procedures that would have been done correctly if surgical checklist was used is a pointer to the fact that the hospital should take this step as soon as possible and the horror of wrong-site surgery as reported by Nwosu will be prevented. Surgical checklist will ensure that correct surgery is done on correct site and on correct patient. A work done by Defontes and Surbida on preoperative safety briefing similar to airline checklist reduced wrong-site surgery by 300%.

Our study showed that only 12 (21.8%) of the respondents correctly stated that the main objective of surgical checklist is for patients’ safety and for safe surgery which implies that the high rate of awareness of the surgical checklist among the theater users in our hospital has not translated to an understanding of its usefulness. Fifty-one (92.7%) of the responders who were aware of the use of surgical checklist were not satisfied with the present state of not using checklist in our hospital; therefore, introducing surgical checklist will be welcomed by most of the theater users. In Finland, the implementation of the checklist increased operating room teams’ awareness of patient-related issues, procedure, and expected risks.

The 11 responders, who are not aware of surgical checklist, indicated that they would want to know more about the surgical checklist and also are willing to be trained. This is a good attitude toward acquiring adequate knowledge about the checklist and its implementation.

One of the reported barriers to the adoption of surgical checklist is its tendency to add to operative time and thus reduce patient turnover in the theater. About half of the responders who are aware of the surgical checklist also believe that it causes delay in running the operation list. This may be a subjective assessment as Ali et al. in a study concluded that surgical checklist did not cause a delay of the operating theater start time. Any hospital intending to adopt surgical checklist in their theater needs to educate their surgical workforce on this important point so as to improve the adoption of the procedure.

Other barriers to the use of the surgical checklist identified in this study include lack of training (58.2%), lack of assertiveness of staff (58.2%), lack of time (34.5%), and requirement for signature (20.0%). This is showing the need to conduct training on surgical checklist among the theater users and also for the hospital to ensure its use. Training has been found to raise the frequency in the implementation of surgical checklists from 8% to 97%.

To be effective, this training should be regular and the barriers should be addressed.

**Limitation**

The limitation of this study is that it used questionnaire and this, unlike an observational study, may not be a true reflection of what they would do in practice. It, however, has the strength of being a prospective study and no similar work has been reported from this part of the world.
**Conclusion**

This study demonstrated a high level of awareness of surgical checklist in our hospital; however, this awareness is based on wrong premises as it is not reflected in their awareness of the true objectives of the procedure. In addition, the study also highlighted the fears of the surgical staff regarding adoption of the procedure. However, the vast majority of the responders would want to be trained on the procedure. There is a need to conduct training on surgical checklist among the theater managers and the users in our hospital and also work toward its implementation after the training to align our hospital with the recommendations by the WHO.

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**Conflicts of interest**

There are no conflicts of interest.

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