



Compliance with Surgical Safety Check-list in the Operating Theatre of Murtala Muhammad Specialist Hospital, Kano, Nigeria

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Abstract

Surgical procedures are among the basic health care services given in the healthcare system in both low and middle income settings. Compliance with surgical safety checklist has been documented to reduce the occurrence of peri-operative surgical complications and improve patient outcomes. The study aimed at evaluating the compliance rate with Surgical Safety Checklist developed by the World Health Organisation in an operating room in Murtala Muhammad Specialist Hospital, Kano. The study employed a prospective observational study and was conducted among 150 patients that underwent abdominal surgery. Compliance and completeness rate with implementation of sign-in, time-out, and sign-out sections were computed using SPSS version 20. A total of 150 abdominal surgeries were performed and the overall compliance rate was 54.8%. The sign-in, time-out and sign-out compliance rates were 61.5%, 54.0% and 49.1% respectively. The overall compliance rate was inadequate. However, the completeness rate was satisfactory except for some elements of the checklist that were not performed at an equal frequency in all aspects of the items. Thus, there is need for regular auditing of checklist utilisation in non-tertiary hospital operating rooms.

Keywords: *Compliance; Surgery; Safety checklist; Operating theatre.*

Introduction

Surgical procedures have been known to be among the fundamental healthcare services given in the healthcare system (Weiser, Regenbogen & Thompson, 2008). It is documented that over 234 million surgical operations are performed annually worldwide and complications occur in 3 to 16% of such procedures (WHO, 2008). Surgical complications have been shown to be a leading cause of morbidity and mortality and also pose a major financial burden to patients and providers (WHO, 2008). It has been previously documented that the minimum estimated complications that

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occur are avoidable (Ginsburg *et al.*, 2013). This calls for the need for a strong safety culture that enhances patient safety initiatives in the healthcare system, and therefore, the safety of surgical care is a global concern (Ginsburg *et al.*, 2013).

Available evidence from the literature has shown that the implementation of different effort modalities can help in improving surgical outcome (Lingard, Regehr & Orser, 2008). As part of the protocol and campaign to improve patient safety, the World Health Organisation launched the Safe Surgery Saves Lives programme in 2008 (WHO, 2008). The aim was to harness political commitment and clinical will to address important patient safety issues, avoidable surgical infection and poor communication among team members (Haynes, Weiser & Berry, 2011). The WHO Surgical Safety Checklist has been associated with a significant reduction in postoperative complications and mortality (De-VriesPrins & Crolla, 2010). Studies on patient safety have underpinned the relationship of workflow patterns and their true impact on safety and serves as the basis for introduction of surgical safety checklists (Conley, Singer & Edmondson, 2011).

There is convincing evidence that to have a successful implementation processes of surgical safety checklist, every healthcare provider including hospital managers, have to actively lead the processes (Vats *et al.*, 2010; Kariyo *et al.*, 2013; Bosk *et al.*, 2009; Hales & Pronovost 2006; Cooper, 2006). In general, implementing surgical safety checklists needs high level interaction among social, cultural, and operational reasons in the health system (WHO, 2005). This study was, therefore, aimed to determine the level of compliance with surgical safety checklist among surgical teams in an operating room of Murtala Muhammad Specialist Hospital (MMSH) in Kano, North-western Nigeria.

Methods

The study employed a prospective observational design, in which one hundred and fifty patients that underwent abdominal surgery were followed in the operating room for the observation of each Surgical Safety Checklist domain. The checklist is a standard tool developed by the WHO in 2009. Thus, the study aimed at identifying the compliance rate with the checklist at the study settings. The checklist domains are the Sign-In, Time- Out, and Sign-Out domains. The operating room managers had English language competency training. The managers were only requested to fill in the items listed in each checklist domain, not to interpret anything. The MMSH is a 500-bed state government-owned hospital serving a population of more than six hundred thousand inhabitants. This is at the study setting and from the hospital records on a total patient's outflow annually including both medical and surgical patients per annum. One major strength of the observation was that non-direct observation was made to reduce the Hawthorn effects. The operating room managers were requested to be the checklist coordinators to guide the surgical team throughout the project. Data were coded, cleaned, entered and analysed using SPSS version 20. Descriptive statistics was used to display checklist compliance and completeness. Categorical variables were presented as absolute and relative frequencies for metric variables. Ethical clearance and official permission was secured to conduct the study from Research Ethics Committee of the Kano State Ministry of Health with ethical approval number MOH/OFF/797/T/1/279.

Results

Findings of this study show that, the sign-in domain of the Checklist had 61.5% compliance rate, time-out domain had 54% compliance rate while sign-out domain had 49.1%. The total mean compliance of the checklist completeness from the cumulative checklist domains was 54.8% (Table 1).

Table 2 shows the surgical safety checklist not complied by the participants in this study. The total missing items in the checklist were sign-in, time-out and sign-out domains which comprised 37.3%, 43.0% and 76.4% respectively.

Table 1: *Compliance with surgical safety checklist at the MMSH*

Variable	Not done	Done not satisfactorily	Done satisfactorily	Compliance rate (%)
Sign In				
1. Verification of patient identity and procedure	18 (12)	12 (8)	120 (80)	
2. The surgical site is marked	82 (54.7)	0 (0)	68 (45.3)	
3. Pulse oximeter is functioning	0 (0)	12 (8)	138 (92)	
4. Awareness of patient known allergy	0 (0)	12 (8)	138 (92)	
5. Risk of aspiration is evaluated	0 (0)	0 (0)	150 (100)	
6. Risk of blood loss is evaluated	0 (0)	0 (0)	150 (100)	
Total(%)		0	Y=61.5	
Time Out				
1. Introduction of team members by name is done	99 (66)	0 (0)	51 (34)	
2. Patient confirmation of procedure is done	14 (9.3)	16 (10.7)	120 (80)	
3. Review of critical anticipated of events	0 (0)	30 (20)	120 (80)	
4. Surgeon reviews operation duration and blood loss	0 (0)	30 (20)	120 (80)	
5. Anesthesia review patient concern	0 (0)	16 (10.7)	134 (89.3)	
6. Review of sterility of equipment by nurses	0 (0)	16 (10.7)	134 (89.3)	
7. Prophylactic antibiotics given	0 (0)	34 (22.7)	116 (77.3)	
8. All imaging results is displayed	0 (0)	30 (20)	120 (80)	
Total(%)		0	Y = 54.0	
Sign Out				
1. Nurse review items with team	137 (91.3)	0 (0)	13 (8.7)	
2. Name of procedure recorded	82 (54.7)	0 (0)	68 (45.3)	
3. Instrument count complete	125 (83.3)	0 (0)	25 (16.7)	
4. Specimen labeled	0 (0)	16 (10.7)	134 (89.3)	
5. Issues with equipments addressed	0 (0)	16 (10.7)	134 (89.3)	
6. Surgical team review key concern on patient recovery	82 (54.7)	0 (0)	68 (45.3)	
Total	47.3	3.5	442. (49.1)	49.1%

Table 2: *Surgical safety checklist not complied by the participants*

Items number	Checklist items	Missing (150)	%
Sign - In	Verification of patient identity and procedure	30	20
	Surgical site marking	82	54.7
Total		112/300	37.3
Time- Out	Introduction of team members by names	99	66
	Confirmation of patient surgical site, and procedure	30	20
Total		129/300	43.0
Sign- Out	Nurses review items with the team	137	91.3
	Name of procedure recorded	82	54.7
	Instrument count complete	125	83.3
Total		344/450	76.4

Discussion

In this study, the total compliance rate with surgical safety checklists was found to be 54.8% which was inadequate. This finding is not in line with the WHO (2008) recommendation, where compliance rate with surgical safety checklist was prescribed to be adequate across healthcare facilities if the compliance rate is greater than 75% across tertiary healthcare facilities. This could be linked to the fact that secondary healthcare facilities tend to have lower compliance rate due to lack of sterile instruments for site marking, under-staffing and poor auditing in any low income setting. Another possible reason why some of these checklist items were not adequately complied with could be due to emergency situation of the surgical procedures seen at the hospital as opposed to elective procedures that are often seen in tertiary institutions. This also coupled with poor communication among the surgical team members on the need to complete the checklist. The findings of this study were not unique; similar findings were documented in previous studies conducted in non-tertiary hospitals around the world (Pickering *et al.*, 2013; Hannam *et al.*, 2013; Van Schoten, 2014; Biff *et al.*, 2015).

The results of this study showed that there was inconsistency in compliance with surgical safety checklist among participants which may be attitudinal or due to poor perception and belief on the need to follow the safety checklist for good outcome of any surgical procedure. Similar finding was also noted by Pickering *et al.* (2013) in Ethiopia and USA.

The current study also revealed that the completeness of the surgical safety checklist was poorly implemented and the items not routinely implemented were verification of patient identity and confirmation of the surgical procedure, sign-in domain, introduction of team members by names and completeness in instrument count post-surgery. This might be due to huge workload for the surgical team members as well as other reasons highlighted earlier. Similar findings were reported in low and middle income settings of non-tertiary hospitals with reasons mainly due to poor surgical safety checklist surveillance at the operating room, and inadequate training on the use of the checklist

and lack of hospital policy for implementation of the surgical safety checklist compliance and completeness (Tadesse, Melekele & Gashawa, 2015).

The study also found that, the major surgical checklist item missing was the Sign-out domain with 76.4%. This finding was not counterintuitive due to the fact that, the study was conducted in a secondary healthcare facility where the sign-out domain of the checklist is not deemed necessary at low income settings. This is, probably, due to lack of patient safety awareness policy coupled with lack of hospital policy to ensure adequate monitoring and reporting of the major deficits of the surgical safety checklist items. Evidently, these processes are not routinely undertaken.

Another possible explanation for this finding could be due to tightly preoccupied surgical teams that make instrument count processing and preparation for the next case difficult, and patient transfer during this period.

Conclusion

The study concluded that, there was inadequate compliance with surgical safety checklist and the completeness was satisfactory except for some elements in the checklist that the compliance rate was inconsistent. Regular auditing of the surgical room and creation of awareness should be put in place by hospital management to help increase compliance rate of the surgical checklists.

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