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Research Article

Enhancing Patient's Safety: Understanding Theatre Team's Attitude as a Barrier towards Use of Surgical Safety Checklist in Kenya

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Abstract

Surgical safety is a global initiative to reduce the mortality and morbidity rate of patients undergoing surgical procedures. Over 234 million surgeries are performed annually all over the world with a mortality of over 1 million and over 7 million getting complications from the procedures [1]. As a result of this, surgical Safety Checklist (SSC) was developed to reduce chances of surgical complications [2]. While the use of the checklist has shown significant reduction of both mortality and morbidity rates, available data indicate that despite its implementation in many hospitals, its use is still a mirage [3]. This study sought to determine the influence of theatre team's attitude on use of surgical safety checklist. The study adopted a cross sectional survey utilizing both qualitative and quantitative methods of data collection. Stratified random sampling technique was used to sample 277 respondents from the study area. Data were collected using a pre-tested questionnaire. The quantitative data was analyzed using SPSS. Version 22 while qualitative data was analyzed using ATLASti. The study established that about 66% of the surgical team implemented WHO's SSC fully. However, a significant 34% did not implement it fully. The study found that theatre team's attitude influenced use SSC. The study concludes that utilization of the WHO SSC is affected by Attitude ($p < 0.05$). We recommend frequent trainings on implementation of SSC by the Ministry of Health (MoH) and the concerned hospital administrative wings as well as relevant policies to ensure compliance. It is also recommended that other studies in other health facilities across the country be done so as to compare findings on the factors affecting implementation of WHO's SSC.

Keywords: *Surgical Safety Checklist; Attitude; Theatre Team; Referral; Nurse; Anesthesiologist; Surgeon; Sub-Saharan Africa*

Introduction

Checklists are a common tool for preventing human errors in complex and high intensity areas of work [4]. They summarize 4 of the most important aspects of safety: correct patient identification and surgical site/side, safe anesthesia and airway or respiratory function, prevention of infection, and successful teamwork. Studies indicate that complications are common and occur in 3% to 16% of all surgical procedures. Further, it is estimated that about 0.4 to 0.8% of mortalities occur due to avoidable complication during surgery [5]. These complications can be avoided if checklists are used. While the WHO presupposes implementation of the checklist as a measure towards reducing theatre related casualties, there has been slow progress in its implementation in both low- and high-income countries, Kenya being one of them [6]. The slow uptake of use of SSC implies that many lives which could otherwise be saved are still lost (0.4% to 0.8% of all surgical procedures) [7].

The significance of the implementation of WHO checklist is well understood however, many health professionals working in the theatres still do not comply with its usage [6]. A study by [8] in East Africa (Kenya, Uganda, Tanzania, Rwanda and Burundi) indicated that the checklist is inconsistently used for surgical procedures across the East African Community even where local modifications have been developed. In a study conducted in the U.K, 99% compliance with the SSC was established. However, the study revealed that self-estimated subjective knowledge about the intention of the checklist was high, whereas objective knowledge was moderate, but improved as compared to the previous years [6]. Another study found large variation in WHO checklist use in a representative sample of English operating rooms [9]. The above studies delved into use of the SSC but however did not consider the factors affecting its use. An understanding of the critical factors affecting use of the SSC is crucial for guiding efforts towards implementation and use.

This study was conducted in Nairobi County and included surgical teams in two referral hospitals. The sampled hospitals play a crucial role in healthcare delivery system in the country and across the Sub Saharan Africa. They have effective and efficient referral systems and receive referral cases for specialized healthcare services from other healthcare institutions within and outside the country. The hospitals also offer teaching facilities for medical courses. The choice was informed by the fact that the hospitals conduct majority of surgeries in the country and has implemented the use of WHO recommended SSC. Further, the researcher is also a health personnel serving within Nairobi County and therefore is familiar with the region.

Materials and Methods

This was a cross-sectional descriptive study and was hospital based. The study utilized quantitative and qualitative research method. The study population comprised theatre teams working in the referral hospitals in Nairobi County. Both random and census methods were applied to arrive at the number of study participants. Simple random sampling technique was used to sample the two referral health facilities in Nairobi County. This included the cadres of the surgical teams as provided by WHO (2014). All the surgical theatre team members in the sampled health facilities were targeted for interviewing. Semi-Structured questionnaires and Key Informant Interview guides were used for data collection. All quantitative data collected were cleaned, coded and entered into computer using SPSS software for windows (SPSS, 22). Analysis of qualitative data was also assisted by a computer software, ATLASti for content analysis. Inferential statistics (Chi Square test) was used to ascertain the relationship between the dependent and the independent variable.

Results and Discussion

Demographic Characteristic of study population

Demographic factors considered included levels of education, area of specialization and duration of work in the medical field. Table 1 represents the demographic characteristics of the respondents.

As shown in table 1 above, most respondents were aged between 26 - 35 years (44.8%). Those who were aged between 36 - 45 years represented 34.8% of the total number of respondents with another 8.1% aged between 46 - 60%. Less than 1% of the respondents were of ages 60 and above years. Also, a majority, 61.5% were female while 38.5% were male. On educational qualification, most of the respondents were registered nurses with diploma qualifications (40.3%), registered nurses with degree were 17.2% while surgeons were 16.7%. Anesthesiologists accounted for 14.9% of the respondents. Most respondents had practiced in the operating theatres for between 0 - 3 years (36.7%). Those who had practiced for between 4 - 6 and 7 - 10 were 19.9% and 19.5% respectively. Only 6.3% had practiced for more than 13 years. The study established that most of the respondents had permanent employment (71.5%). Further, most of the respondents (42.1%) performed over 100 surgeries in a month.

Use of SSC

The study sought to understand the use of SSC, versions used as well as whether it was used outside the facilities where the respondents were drawn from. Table 2 below presents the findings.

	Variable	Frequency	Percent
Age	20 - 25	26	11.8
	26 - 35	99	44.8
	36 - 45	77	34.8
	46 - 60	18	8.1
	60 and above	1	0.5
Gender	Male	85	38.5
	Female	136	61.5
Education Qualification	Registered Nurse (Diploma)	89	40.3
	Registered Nurse (Degree)	38	17.2
	Trained theatre Nurse	23	10.4
	Surgeon	37	16.7
	Anaesthesiologist	33	14.9
Number of years of practice in the operating theatres	1 - 3	81	36.7
	4 - 6	44	19.9
	7 - 10	43	19.5
	11 - 13	40	18.1
	Above 13	14	6.3
Type of Employment	Permanent	158	71.5
	Part time	37	16.7
	Visiting Practitioner	25	11.3
Number of surgeries participated in per month	< 50	50	22.6
	51 - 75	31	14.0
	76 - 100	47	21.3
	101 and above	93	42.1
Total		221	100.0

Table 1: *Demographic characteristics of the respondents.*

		Frequency	Percent
Use of SSC	Fully	146	66.1
	Partially	73	33.0
	Not at all	2	0.9
SSC used	Own version	28	12.7
	Modified WHO SSC	147	66.5
	WHO SSC as it is	46	20.8
Use Outside sampled facilities	Yes	135	61.1
	No	86	38.9
Total		221	100.0

Table 2: *Use of SSC.*

The findings as presented in table 2 above indicate that about 66.1% of the respondents used SSC fully. Those who used it partially were 33.0%. Most respondents used a modified version of the SSC (66.5%) and were also using it in other facilities outside the sampled facilities (61.1%).

Further analysis by cadre revealed about 26.7% of the surgeons, 72.3% of the registered nurses (diploma), 48.7% of the registered nurses (degree) and, 62.8% of the anesthesiologists fully used the SSC. The findings reveal that SSC was least used among the surgeons (26.7%). Figure 1 below presents the findings.

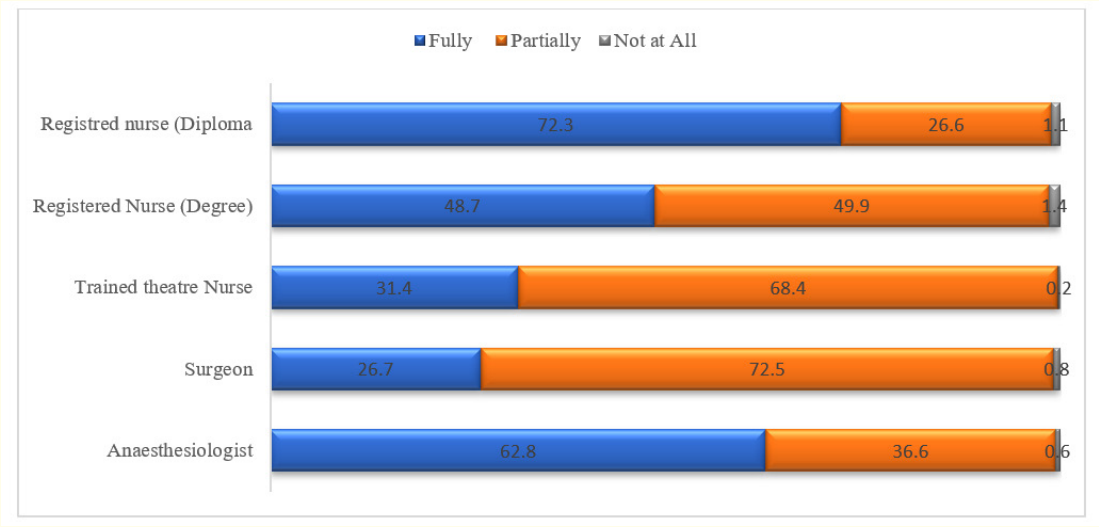

Figure 1: *Use of SSC by cadre.*

A two-category use and none use of SSC was also computed based on the findings of the study where partial use was interpreted as non-use. Figure 2 below presents the proportion of the respondents using SSC.

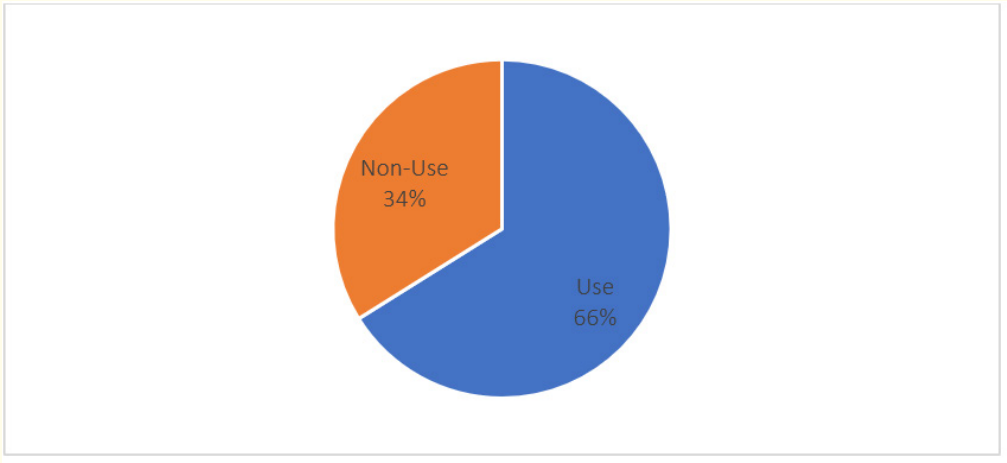

Figure 2: *Use and non-use of SSC.*

The study established that about 66% of the respondents used SSC while in the theatre and that the most common versions used was the modified WHO SSC.

From the Key informant interviews with the facility in charge, it emerged that use of SSC was highly encouraged and that most surgical teams used the SSC. One of the informants indicated that: The facility implements at 95% (not fully used). It is not used in certain scenarios such as when it is an emergency depending on the team. It could be bypassed. Areas not used … mostly time out not done on all patients. This is from audits done. Sometimes it could be indicated that it was done but in actual sense not done. The facility conducts spot checks to see whether it's not done.

The findings indicate that majority of the surgical team used the modified SSC. However, the other proportion who did not use the SSC is still a major concern with regards to the healthcare. Also, critical is the finding that most surgeons did not use the SSC. Poor utilization of SSC has been noted by reference [10] who noted poor utilization of SSC especially in the SSA. The findings of this study also reveal a trend of modification of the WHO SSC as majority indicated having modified it to their context. This finding supports initiatives by WHO towards implementation, which is a positive indicator towards its implementation. The researcher notes that such initiatives in the facilities sampled could be exploited further as learning points for utilization of the SSC. Towards practical implementation of SSC in different contexts, WHO published a comprehensive implementation manual to accompany the introduction of the WHO checklist that encouraged modification to fit with local practice, cautioning against making the checklist overly complex [11].

Relationship between attitude and use of surgical safety checklist

Attitude towards use of SSC was investigated on its contributions to teamwork, safety, initiative and barriers. The attitude was measured through likert scale and reduced to two levels representing positive and negative attitude. Chi square tests was used to ascertain the relationship between attitude and use of SSC. Table 3 below presents the relationship between attitude on teamwork and safety and use of SSC.

Attitude						
			Use of SSC			
			Use	None-Use	OR (CI = 95%)	p-value
I believe failing to use the checklist is poor professional practice	Positive	112 (50.7)	91	21	1	< 0.0001
	Negative	109 (49.3)	55	54	4.3 (2.3 - 7.8)	
I believe using the checklist reduces likelihood of human error	Positive	112 (50.7)	89	23	1	< 0.0001
	Negative	109 (49.3)	57	52	3.5 (2.0 - 6.4)	
I believe using checklist improves patient safety	Positive	145 (65.5)	101	44	1	0.1193
	Negative	76 (34.4)	45	31	1.6 (0.9 - 2.8)	
I believe using the checklist improves teamwork in theatre	Positive	107 (48.4)	94	13	1	< 0.0001
	Negative	114 (51.6)	52	62	8.6 (4.3 - 17.1)	
Use of checklist should be mandatory for every case	Positive	81 (36.7)	49	32	1	0.1835
	Negative	140 (63.3)	97	43	0.7 (0.4 - 1.2)	

Table 3: *Teamwork and Use of SSC.*

The findings as indicated in table 3 above indicate that most of the respondents (50.7%) believed that failing to use the checklist is poor professional practice. Slightly above 50%of the respondents also indicated that they believed that using the checklist reduces the likelihood of human error. Also, about 65.5% of the respondents indicated that they believed that using checklist improves patient safety. However, belief that use of the checklist improves teamwork in theatre was recorded by 48.4% while the opinion that use of checklist should be mandatory for every case was recorded by 36.7% of the respondents.

The findings reveal that attitude of the respondents with regards to use of SSC to achieve teamwork had a positive relationship with Use of SSC. However, opinion that use of checklist should be mandatory for every case and that using checklist improves patient safety were not significantly associated with use of SC ($p > 0.05$). Respondents who did not believed that failing to use the checklist is poor professional practice, that using the checklist did not reduce the likelihood of human error and that using the checklist did not improve teamwork in theatre were 4.3,3.5 and 8.6 times less likely to use the SSC.

Table 4 below presents the relationship between initiative and use of SSC.

Initiative						
			Application of checklist in facility			
			Use	None-Use	OR (95% CI)	p-value
I have initiated use of checklist in the past	Positive	113 (51.1)	99	14	1	0.582
	Negative	108 (48.9)	47	61	9.2 (4.7 - 18.1)	
I intend to initiate use of checklist in the future	Positive	119 (53.8)	98	21	1	0.803
	Negative	102 (46.2)	48	54	5.3 (2.9 - 9.7)	

Table 4: *Initiative and use of SSC.*

As indicated in table 4 above, most of the respondents indicated that they had initiated use of SSC in the past (51.1%) and that they intend to initiate use of SSC in the future (53.8%). The study however revealed that SSC initiation was not statistically related to use of SSC ($P > 0.05$).

Table 5 below presents the relationship between barriers and use of SSC.

Application of checklist in facility						
		N (%)	Use	Non -Use	OR (95% CI)	p-value
The requirement for signatures	Positive	116 (52.5)	87	29	1	< 0.0001
	Negative	105 (47.5)	59	46	2.3 (1.3 - 4.1)	
Lack of assertiveness of staff	Positive	112 (50.7)	90	22	1	< 0.0001
	Negative	109 (49.3)	56	53	3.9 (2.1 - 7.1)	
Lack of time	Positive	101 (45.7)	88	13	1	< 0.0001
	Negative	120 (54.3)	58	62	7.2 (3.7 - 14.3)	
Lack of training	Positive	106 (48)	82	24	1	0.0007
	Negative	115 (52)	64	51	2.7 (1.5 - 4.9)	
Lack of an electronic version of the checklist	Positive	116 (52.5)	97	19	1	< 0.0001
	Negative	95 (46.5)	39	56	7.3 (3.9 - 13.9)	

Table 5: *Common barriers to use of SSC.*

The study established that common barriers to implementation of SSC were the requirements for signatures, lack of assertiveness of staff, lack of time, lack of training and lack of electronic version of the checklist. Table 5 below presents the findings. Respondents with positive attitude towards the requirements for signatures as a non-barrier were 52.5%, lack of assertiveness of staff, 50.7% lack of time, 45.7%, lack of training, 48% and lack of electronic version of the checklist, 52.5%. The study established that perceptions regarding such barriers were positively related to use of SSC ($P < 0.05$). Those who perceived requirements for signatures, lack assertiveness of staff, lack of time, lack of training and lack of electronic version of the checklist as a barrier were 2.3, 3.9, 7.2, 2.7 and 73 times less likely to use the SSC. The findings indicate that barriers in use of SSC exist and that such barriers including lack of staff assertiveness, time and electronic versions of the checklist relate to use of the SSC.

The study revealed positive attitude towards the contribution of SSC on teamwork and safety, as well as initiatives made on use of SSC. Barriers and norms generated mixed but positive attitude. Generally, the findings indicate a positive attitude towards use of SSC in the facilities sampled. Chi Square test conducted on the attitude score revealed a significant relationship between attitude and utilization of SSC leading to an understanding that attitude affects implementation and use of SSC, where positive attitude towards SSC translates to its full utilization. In all the reviews conducted in the previous sections of this study, positive attitude is required for use of SSC. According to reference [12], where negative attitude is expressed by the nurses and the doctors, implementation of SSC is practically impossible. Healthcare facility administrators therefore need to ensure development of employee confidence which leads to positive attitudes if implementation and use is to be realized. Reference [13] identified the general feeling that the checklists are undermining professional expertise as a factor contributing to negative attitude towards use of SSC [14].

Conclusion

The study concludes that over 60% of the sampled respondents implemented WHO's SSC fully. However, a significant proportion did not implement it fully. The study established that most of the theatre team had positive attitude towards utilization of SSC and that this affected its implementation.

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Conflict of Interest

The authors declare no conflict of interest in the financing and preparation of this manuscript. All data source is acknowledged and financial obligations therein were borne by the authors.

Bibliography

1. Weiser Thomas G., *et al*. "An estimation of the global volume of surgery: a modelling strategy based on available data". *The Lancet* 372.9633 (2008): 139-144.

2. Van Klei WA., *et al*. "Effects of the introduction of the WHO "Surgical Safety Checklist" on in-hospital mortality: a cohort study". *Annals of Surgery* 255.1 (2012): 44-49.

3. Dekker Sidney. Patient safety: a human factors approach. CRC Press (2016).

4. de los Santos E Fong., *et al*. "Medical Physics Practice Guideline 4. a: Development, implementation, use and maintenance of safety checklists". *Journal of Applied Clinical Medical Physics* 16.3 (2015): 37-59.

5. Weiser Thomas G., *et al*. "Estimate of the global volume of surgery in 2012: an assessment supporting improved health outcomes". *The Lancet* 385 (2015): S11.

6. Sendlhofer Gerald., *et al*. "The gap between individual perception and compliance: a qualitative follow-up study of the surgical safety checklist application". *PLoS One* 11.2 (2016): e0149212.

7. World Health Organization. "Patient safety: making health care safer. No. WHO/HIS/SDS/2017.11". World Health Organization (2017).

8. Epiu Isabella., *et al*. "Working towards safer surgery in Africa; a survey of utilization of the WHO safe surgical checklist at the main referral hospitals in East Africa". *BMC Anesthesiology* 16.1 (2015): 60.

9. Russ Stephanie., *et al*. "Measuring variation in use of the WHO surgical safety checklist in the operating room: a multicenter prospective cross-sectional study". *Journal of the American College of Surgeons* 220.1 (2015): 1-11.

10. Cadman Victoria. "Use of the WHO surgical safety checklist in low- and middle-income countries: a review of the literature". *Journal of Perioperative Practice* 28.12 (2018): 334-338.

11. Pickens Jeffrey. "Organizational behavior in health care". *Attitudes and Perceptions* 3 (2005): 43-76.

12. Van Manen Max. "Researching lived experience: Human science for an action sensitive pedagogy". Routledge (2016).

13. Solsky Ian., *et al*. "WHO Surgical Safety Checklist Modification: Do Changes Emphasize Communication and Teamwork?" *Journal of Surgical Research* (2018).

14. Mirlashari Jila., *et al*. "Nurses' and Physicians' Experiences of the NIDCAP Model Implementation in Neonatal Intensive Care Units in Iran". *Journal of Pediatric Nursing* 45 (2019): e79-e88.

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