



Research Article

# Perioperative Nurses' Awareness and Attitude about Use of WHO Surgical Safety Checklist in India: An Institution Based Cross-Sectional Study

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## I N F O

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## A B S T R A C T

**Background:** WHO SSC is found to be effective in reducing 57% of surgical complications and decreases surgical morbidity, mortality and sentinel events. Despite the known positive effects of using the surgical safety checklist prior to surgery, its application in practice is much less. It is important to determine the awareness and attitude of health personnel about the use of the checklist, as it can help to implement it.

**Objectives:** The purpose of this study is to assess the awareness and attitude about the use of WHO Surgical Safety Checklist (SSC) among perioperative nurses and to determine the association between awareness and attitude about the use of WHO Surgical Safety Checklist (SSC) among perioperative nurses and their selected socio-demographic variables.

**Method:** It was a descriptive cross-sectional study conducted on 25 perioperative nurses working at a tertiary care hospital. Data were collected using a validated self-structured socio demographic data assessment sheet, Attitude questionnaire and Awareness scale.

**Result:** Data analysis was done using descriptive and inferential statistics. The results showed that awareness and attitude scores were independent to the age, gender, and training institute. Nurses were having significantly higher mean awareness and attitude score about use of WHO SCC i.e.  $5.16 \pm 1.3$  and  $17.12 \pm 1.1$  respectively. Most of the perioperative nurses (92%) had positive attitude towards implementing SSC to prevent errors. There was no significant correlation found between the perioperative nurses' awareness and attitude about using WHO SCC at  $p < 0.05$ .

**Conclusion:** The study concluded that nurses have significantly higher awareness and positive attitude towards the use of WHO SSC and it's crucial to prevent major complications of surgeries to achieve patients' safety.

**Keywords:** Awareness, Attitude, Surgical Safety Checklist, Perioperative Nurses



## Introduction

Surgery is an art and science of treating diseases, injuries and deformities by operation and instrumentation. It has become an integral part of global health care, with an estimated 234 million operations performed yearly, which means one operation for every 25 people, while conducting such surgeries complications are common and often preventable.<sup>1</sup> The risk of complications is unsatisfactorily identified in numerous part of the world but in developed countries death rate from inpatient surgery is 0.4% to 0.8% and complication rate is 3% to 17%. In developing countries, these rates are likely to be much higher.<sup>2</sup>

In a systematic review, it was found that the majority of the unforeseen events occurred in the Operation theatre and these serious events can be prevented from occurring by 43% using the standard of care prevent. In response, the World Health Organization (WHO) launched the "Safe Surgery Saves Lives" global campaign in 2007, during which it identified key processes in the operative period that could potentially affect patients' outcomes. In 2009, a modified version of SSC was also introduced.<sup>3</sup>

The WHO Surgical Safety Checklist (SCC) was prepared to improve the safety of surgical procedures in order to execute key safety checks during important phases of perioperative care: prior to the induction of anaesthesia (sign in), prior to skin incision (time out) and before the team leaves the operating room (sign out).<sup>1</sup>

Implementation of a surgical safety checklist has caused a reduction in the number of perioperative complications and communication gap in the operation theatre.<sup>3</sup> Since then, WHO SSC has been implemented in more than 4000 hospitals worldwide and has shown to reduce surgical morbidity and mortality and various sentinel events.<sup>4</sup>

Despite the known positive effects of using the surgical safety checklist before the surgery, its application is much less in practice.<sup>5</sup> Though, a large number of hospitals all over the world participated in this WHO initiative by 2012. However, this data cannot be helpful in deciding the usage of WHO SSC by the frontline health care personnel which could only be predicted by their attitude.<sup>5</sup> It is vital to describe health personnel's acceptance and attitude about the use of Surgical Safety Checklist as it can help in its implementation. In addition, awareness and knowledge of the checklist might show their training process proficiency. Some studies showed that an improvement in adherence to checklist is required in order to raise awareness regarding the use of SSC.<sup>6</sup>

In a recent finding, it was stressed that further research is required regarding checklist implementation<sup>7</sup> and efforts should target to worldwide awareness and complete knowledge about checklist usage. But unfortunately, gaps in

knowledge about when to use the checklist are still present.<sup>8</sup> Thus, there is a need to assess the level of awareness, attitude and uses of WHO Surgical Safety Checklist among perioperative nurses working in hospitals.

## Objectives

This study aimed to assess the awareness and attitude about the use of WHO Surgical Safety Checklist (SSC) among perioperative nurses and to determine the association between awareness and attitude about the use of WHO Surgical Safety Checklist (SSC) among perioperative nurses and their selected socio-demographic variables.

## Statement of Significance to Nursing

Nurses are the main mediators between the surgery team and the patient. Usually, it is the circulator nurse who reminds recall has to be made by circulator nurses while conducting the surgery; therefore, they should have an understanding and awareness regarding the content of Surgical Safety Checklist and positive attitudes towards its use. This will help to encourage the other team members for its implication and prevent unforeseen events, serious complications, and ultimately reduction in the number of morbidity and mortality rates.

## Literature Review

An International survey on usage and opinions about the WHO surgical safety checklist found that in total, only 57.5% reported routine use of the WHO SSC perioperatively. Respondents' showed positive attitude towards its use. The maximum numbers of respondents were from Egypt (10.8%), followed by India (9.2%), Pakistan (3.9%), Bangladesh (2.5%) and the UK (1.8%). The use of the WHO SSC is different across countries, especially in lower middle- and low-income countries in comparison to high income countries (43.5% vs. 83.5%,  $p < 0.001$ ) where it is more likely to improve patient safety.<sup>9</sup>

The utilization of the checklist increased safety related performance in the operation theatre and reduction in post-operative fever, surgical wound infections (11.2%), pneumonia and unplanned readmission which was reported by a cross-sectional study.<sup>10</sup> In another cohort study, it was seen that checklist was associated with 36.6% relative reduction in mortality; 0.069% during and 0.019% after implementation of the checklist.<sup>11</sup>

In a systematic review, checklist exposure was related with reduced post-operative mortality [OR 0.75 (0.62–0.92);  $P < 0.01$ ;  $I^2 = 87\%$ ], reduced complication rates [OR 0.73 (0.61–0.88);  $p < 0.01$ ;  $I^2 = 89\%$ ] and also results in better postoperative outcomes.<sup>12</sup> It was seen that WHO SSC was feasible in terms of time and cost and reported that there were 80% of the participants who found checklist easy to use and 80.2% of the participants felt that it helps in

improvement of operating theatre safety. However, only 19.8% of them found it time consuming, and impracticable to use in emergency surgery.<sup>13</sup>

Though Surgical Safety checklist has a number of benefits but this does not ensure its usage among the surgery team members. In an observational study, it was found out that factors such as staff insecurity, negative attitude towards the checklist, a lack of teamwork, and hesitation to complete the checklist were the barriers which hampered the usage of checklist.<sup>14</sup>

In a descriptive study it was noted that 93.8% of the surgical personnel were aware of the checklist and 88.8% of them were aware of its objectives, among all surgical personnel nurses knew better about the WHO surgical safety checklist.<sup>8</sup>

Overall, the attitude of surgeons towards the impact of SSC on safety and team work was positive. Surgeons were more sensitive to the barriers of SSC application in comparison of nurses and anaesthetists ( $p=0.046$ ), Nurses had the highest level of support for SSC among all the three groups, though a gap in knowledge among the surgery team members was also present.<sup>5</sup>

## Materials and Methods

### Design and Settings

The quantitative study with cross-sectional design was undertaken from January 2018 to February 2018. A sample of 25 perioperative nurses was selected by Simple Random Sampling technique. Data were collected by face to face interview. This study was conducted in a 1000 bedded tertiary care teaching hospital, Uttarakhand, India. The project was approved from Institutional Ethics Committee (IEC). Informed written consent was obtained from each participant. Confidentiality of information and anonymity of the subjects was maintained. The inclusion criteria were the registered nurses working in Operation Theatres (OTs) in selected tertiary care hospital and willing to participate in the study. The nurses who were working in minor OTs were excluded from the study.

Perioperative nurses satisfying the inclusion criteria were selected using simple random sampling as study participants. After administering the participant information sheet, informed written consent was obtained. Demographic data was collected using socio-demographic data assessment sheet. For assessing attitude and awareness of perioperative nurses working in operation theatre, attitude questionnaire and Five-point Likert awareness scale were administered by face to face interview.

### Research Instruments

Two self-structured instruments were used for data collection in addition to a socio-demographic data assessment sheet.

### Awareness Questionnaire

This consisted of seven multiple choice questions related to awareness about WHO safety checklist and its use in perioperative setting. Each correct response was scored one and the overall possible score ranges from 0-7. Higher scores ( $\geq 4$ ) indicate high awareness and low score ( $< 4$ ) indicates low awareness. The awareness questionnaire was found to be 85% reliable ( $r=0.85$ ).

### Five-Point Likert Attitude Assessment Scale

A five-point Likert's scale was developed consisting five items stated in positive (03) and negative statement (2). Five point with score ranged from strongly agree (5), agree (4), uncertain (3), disagree (2) and strongly disagree (1); however, for negative statements reverse scoring was done. Participants who marked strongly agree and agree were grouped into positive attitude, who were uncertain are grouped into neutral while who marked disagree and strongly disagree are grouped into negative attitude. The attitude assessment questionnaire was found to be 81% reliable with Cronbach's  $\alpha=0.81$ . The validity of both the tools was established by three nursing and two medical experts. Mean and standard deviation were used to describe continuous variables, whereas frequencies and percentages were obtained for categorical data. A Chi-squared test was used to assess the association of awareness and attitude with socio demographic characteristics of perioperative nurses at p value  $< 0.05$ . Pearson correlation coefficient was used to assess the correlation between awareness and attitude of perioperative nurses regarding use of WHO SSC.

### Result

Majority of nurses were young (96%), studied at private college (88%), having baccalaureate nursing degree (88%) and having experience  $\leq 5$  years (84%) (Table 1). Overall, nurses were having significantly higher mean awareness score about use of WHO SCC i.e.  $5.16 \pm 1.3$  (Mean%: 73.7) (Table 2). Similarly, mean attitude score for use of WHO SCC was also found as high as  $17.12 \pm 1.1$  (Mean%: 68.5) (Table 2).

**Table 1. Socio demographic profile of perioperative nurses**

Variables	f (%)
(n=25)	
<b>Age</b>	
20-25	14 (56)
26-30	10 (40)
31-35	01 (4)
<b>Gender</b>	
Male	11 (44)
Female	14 (56)

Institution of training	
Government	03 (12)
Private	22 (88)
Qualification	
Diploma	03 (12)
Degree	22 (88)
Duration of clinical experience (in years)	
<2	07 (28)
2-5	14 (56)
>5	04 (16)
Duration of perioperative experience (in years)	
0	04 (16)
<2	07 (28)
2-5	13 (52)
>5	01 (4)

**Table 2. Awareness and attitude score about WHO surgical safety checklist among perioperative nurses**  
(n=25)

Parameters	Max Score	Mean±SD	Mean % Score	Range
Awareness	7	5.16±1.3	73.7%	2-7
Attitude	20	17.12±1.1	68.5%	15-20

**Table 3. Attitude about the WHO Surgical Safety Checklist among perioperative nurses**  
(n=25)

	Attitude f (%)		
	Positive	Neutral	Negative
Do you think SSC is useful	25 (100)	0	0
Do you think SSC prevents mistakes	23 (92)	2 (8)	0
Do you feel SSC is reliable to use	24 (96)	1 (4)	0
Do you think the SSC doesn't work	22 (88)	3 (12)	0
Do you think SSC causes delay	16 (64)	7 (28)	2 (8)

According to all perioperative nurses, SSC was considered as a useful tool, 92% and 8% of them were having positive and neutral attitude respectively as implementation of SSC prevented mistakes. When asked whether SSC was reliable to use, 96% of them were having positive attitude while 4% were having neutral attitude, 88% of the nurses felt that implementation of SSC does not work while 64%, 28% and 8% of nurses showed positive, neutral and negative

attitude respectively when asked whether SSC causes delay in surgical procedures (Table 3).

**Table 4. Association of attitude with socio demographic characteristics of perioperative nurses**  
(n=25)

Variables	Attitude f (%)		χ <sup>2</sup> value p value
	Positive	Neutral	
Age			
20-25	11	03	0.76 0.68
26-30	09	01	
31-35	01	00	
Gender			
Male	09	02	0.07
Female	12	02	0.79
Institution of training			
Government	03	00	0.64
Private	18	04	0.42
Qualification			
Diploma	02	01	0.76
Degree	19	03	0.38
Duration of clinical experience (in years)			
<2	07	00	3.74 0.15
2-5	10	04	
>5	04	00	
Duration of perioperative experience (in years)			
0	03	01	1.92 0.58
<2	05	02	
2-5	12	01	
>5	01	00	

\*p significant at <0.05.

**Table 5. Association of awareness with socio demographic characteristics of perioperative nurses**  
(n=25)

Variables	Awareness f (%)		χ <sup>2</sup> value p value
	Low	High	
Age			
20-25	03	11	2.67 0.26
26-30	00	10	
31-35	00	01	
Gender			
Male	02	09	0.71
Female	01	13	0.39

Institution of training			
Government	02	01	9.64
Private	01	21	0.00*
Qualification			
Diploma	00	03	0.46
Degree	03	19	0.49
Duration of clinical experience (in years)			
<2	03	04	8.76 0.01*
2-5	00	14	
>5	00	04	
Duration of perioperative experience (in years)			
0	01	03	4.37 0.22
<2	02	05	
2-5	00	13	
>5	00	01	

\*p significant at <0.05.

**Table 6. Correlation between awareness and attitude regarding use of WHO SSC among perioperative nurses**

Variables	Awareness	
	r-value	p-value*
Attitude	-0.036	0.86

\*p-value significant at <0.05.

Attitude scores were independent of age, gender, institute of training, qualification, duration of clinical and perioperative experiences of nurses (Table 4). However, there was a significant association found between type of training institute and awareness of the perioperative nurses ( $p=0.00^*$ ), in addition, duration of clinical experiences is significantly associated with the awareness of the perioperative nurses ( $p=0.01$ ) (Table 5).

It was found that there was a weak negative correlation between awareness and attitude of perioperative nurses regarding use of WHO SCC, which is not statistically significant at value of  $p < 0.05$  (Table 6).

## Discussion

WHO surgical safety checklist is an effective intervention to decrease morbidity and mortality in surgical procedures. It was found that the perioperative nurses were having more awareness about SSC; hence they can be considered as leaders for using the checklist in an appropriate manner.<sup>15</sup>

In the present study, there are 73.7% of perioperative nurses who were having high awareness regarding the use of SSC which is relatively quite low in contrast to previous studies. Abdel Gali, and Hurtado and colleagues reported awareness 100% and 93.8% respectively in their institutions; reason for

high awareness was considered compulsory usage of SSC in both institutions.<sup>16</sup> A Study done in Guatemala reported 93.8% of awareness regarding SSC.<sup>8</sup> Another study done by Dharampal N et al. also found high awareness which was attributed to the web-based resources and clinical rounds in the institutes.<sup>17</sup>

In our study, 92% were having positive attitude that the use of SSC would prevent error. Similarly, in the previous study, 96.9% surgical team members responded affirmatively includes nursing team (99.1%) and anaesthesiologists (100%). In a study Stephanie Jane Russ found out that only 67% of the respondents believed that it would reduce the number of errors during surgery.<sup>18</sup> Another study done by Roybal J et al. also a found similar finding that only 54.7% of participants felt that checklist improves patient safety.<sup>19</sup>

This difference in attitude could be associated with the different population in the studies while in our study we included only perioperative nurses.

The finding of our study reported that 100% of participants were having a positive attitude that SSC is useful and 92% of participants believed that it prevented mistakes. Zingiryan A et al. found that respondents felt that it improved patient safety (mean 3.96; 72.6%), communication (mean 3.97; 76.4%), and helped to prevent errors (mean 3.82; 67.2%).<sup>20</sup> It was also found that checklist was a time-efficient tool which is also consistent with our study findings.

## Delimitations of the Study

- Self-structured questionnaires were used for data collection.
- Small sample size limits the generalizability of the study.
- Single center study.

## Recommendations for Future

Nurses should identify the attitude and awareness regarding use of WHO SSC and help them to remove the barriers in compliance. Nurses should use the checklist for each surgery which can prevent uncommon and serious errors by reminding the surgery team members about patient identity, surgical site, comorbidity and other unforeseen complications.

Nursing students should be trained in using WHO surgical safety checklist in operation theatre. In service education should be conducted for perioperative nursing staff regarding how to use WHO surgical safety checklist. Nurse educators can update the knowledge of perioperative nurses regarding content of WHO SCC.

This study can be replicated with a large sample size and longer duration. Qualitative study can be done by asking participants' verbal point of views and problems that they are facing while using the WHO SSC. Studies can be done

to examine the effectiveness of the WHO surgical safety checklist. Multicentre studies can be conducted regarding use of surgical safety checklist.

## Conclusion

WHO Surgical Safety Checklist is beneficial and its implementation is a good decision. Nurses are having positive attitude regarding use of WHO surgical safety checklist and awareness increases with years of experiences. Awareness and attitude about the WHO surgical safety checklist among nurses are of utmost importance to prevent serious complications of surgeries and unanticipated events, so that patient safety can be achieved. Also, a formal way of instructional strategies such as workshops, conferences, seminars, web resources are required to make the surgery team members fully aware regarding the use of surgical safety checklist.

**Conflict of Interest:** None

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