

As a Member of the Surgical Team, the Nurse Anesthetist's View of Using the WHO Surgical Safety Checklist in Swedish Health Care

Abstract

Introduction: In Sweden, during specialty training, the nurse anesthetist learns how to ensure patient safety in a health-care setting by implementing the surgical checklist measures during perioperative care. To date, there are still considerable shortcomings when it comes to implementing these patient safety measures in Swedish hospitals. **Aim:** The purpose of this study is to describe the use of the WHO surgical safety checklist (WHOSSC) by surgical teams, with special emphasis on nurse anesthetists to increase patient safety. **Materials and Methods:** This descriptive questionnaire-based study was performed between September 2018 and March 2019 and included 196 health-care professionals who completed the questionnaire. The survey was carried out among all the health-care professionals at two surgical units at a university hospital during the data collection period. **Results:** The results reveal that the majority of health-care staff in this study agree with the need to implement the WHOSSC during surgery and the necessity of doing so to ensure patient safety. However, it is not clear whether this checklist needs to be made a matter of routine at the clinics and whether this is possible in emergency situations. **Conclusion:** The nurse anesthetists, as members of the surgical team, use the list all the time in emergency situations and conclude, like other members of the team, that the list improves patient safety. Clearer procedures are needed during surgery regarding the usage of the checklist in practice, and there should be a designated person in the surgical team responsible for implementing the checklist.

Keywords: Occupation, research, surgery, teamwork questionnaire, world health organization checklist

Introduction

A nurse anesthetist who wishes to be registered in Sweden must complete a specialized 1-year training course in anesthetic nursing. In Sweden, the nurse anesthetist's work differs slightly from that in other countries. He/she is responsible for the patients in every aspect of anesthesia, under the direct or indirect guidance of an anesthetist, following the plan of the supervising anesthetist.^[1] A registered nurse induces, maintains, and ends general anesthesia, according to the American Society of Anesthesiologists (ASA) for Class I–II patients. The work of a registered nurse involves organizing nursing care, developing it, and communicating clearly with other members of the team in the interests of patient safety. Registered nurses also build assurance, a feeling of confidence, and an atmosphere in which patients feel secure, avoiding complications.^[1]

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According to the Patient Safety Act (SFS 2010, 659), patient safety is a top priority. Registered nurses must therefore protect their patients from any damage to their health. They must work in a structured manner to do everything they can to avoid harm in their work. When they meet patients before surgery, they should build a relationship to help these patients feel secure in their hands.^[2] This also applies to anesthesia, so the patient is without fear and knows that his/her needs will be met during surgery.^[3] In recent years, there has been significant investment in hospitals in Sweden to ensure patient safety and avoid harm in the course of providing health care. Certain measures have been implemented and hospital staff involved in the care of the patient are expected to ensure patient safety and are responsible for doing so.^[4] These measures include the WHO Surgical Safety Checklist (WHOSSC) which aims to increase safety and reduce possible complications.^[5] Nurses usually spend

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most of their time caring for each patient. They prepare patients for surgery and then leave them on the ward.^[2] It has been shown that the WHOSSC actually helps reduce postoperative complications^[6-9] and compliance with the list is enhanced by greater knowledge and experience.^[9]

However, some studies have shown that some obstacles still exist when it comes to using the WHOSSC. The main obstacle is the lack of knowledge of how to use the list, but staff may also question the value of the list.^[10] Nørgaard *et al.*^[11] found that the list was often not adhered to in emergency situations or brief procedures. Other studies have shown that the feeling that it is possible to skip the WHOSSC list may conceal a lack of knowledge and give staff a false sense of security.^[12-16] More efforts must be put in to overcome resistance to using the WHOSSC, especially as some doctors find that it takes too much time and believe it is not necessary. Therefore, we aimed to describe the experience of Swedish health-care professionals in using the WHO surgical checklist, with special emphasis on nurse anesthetists as members of the surgical team.

Materials and Methods

Sample and settings

A quantitative study with a descriptive study design was performed on two surgical wards at one university hospital in the western part of Sweden. The study was performed between September 2018 and March 2019. The survey was carried out among all the health-care professionals at the hospital during the data collection period. The inclusion criteria for the study were health-care professionals employed at the hospital, those who reported using the WHO checklist at least five times, and those who wanted to participate in the study. The exclusion criteria for the study were health-care professionals who were hired as extra staff and those who declined participation in the study. A total of 248 health-care professionals (assistant nurses, nurse anesthetists, surgical nurses, anesthesiologists, surgeons, and obstetric surgeons) were eligible to participate. One hundred and ninety-six health-care professionals (79%) completed the questionnaire. There were 38 (19%) nurse anesthetists in the research group. The data in this study were taken from employees working on two different wards: Workplace 1 (surgery for women's diseases) and Workplace 2 (surgery for abdominal complaints).

The questionnaire

The study questionnaire was conducted by the authors to realize the aim of this study, based on the author's own experience of surgery and the literature on implementing and using the WHOSSC. The questionnaire was validated by one nurse anesthetist, one surgical nurse, one surgeon in obstetrics, and one anesthesiologist, using the test-retest statistical method. These individuals were included in the present study.

The questionnaire included details such as the age, gender, occupation, work experience, and workplace of health-care professionals; whether they had completed education/training in using the WHO checklist at their department; had the WHO checklist been adapted to their department?; was it clear who was responsible for ensuring that the WHO checklist was implemented?; who was responsible for using the WHO checklist before surgery?; how often did they think the WHO checklist was used in emergency situations?; and does the WHO checklist improve patient safety?

Data collection

Before the healthcare professionals began to answer the questions, the questions were sent to the head doctor and head nurse. When they had approved the questions, the health-care professionals began to answer them. The questionnaire was on paper. All the health-care professionals received written and verbal information about the study and the questionnaire, and the first author distributed the questionnaire to the surgical wards. The health-care professionals answered the questionnaire anonymously on their wards and they had 2 weeks to answer the questionnaire. They were all reminded twice by E-mail. Five to eight minutes were needed to complete the questionnaire.

Data analysis

Descriptive statistics for continuous variables were given as the means, standard deviations, medians, the 25% (25th) quartile, the 75% (75th) quartile, and minimum and maximum, and numbers and percentages were given for categorical variables. The Mann-Whitney *U*-test was used to compare the groups in terms of continuous variables, Fisher's exact test for dichotomous variables, the Mantel-Haenszel Chi-square test for ordered categorical variables, and Pearson's Chi-square test for unordered categorical variables. All the tests were two sided and conducted at the level of 5% significance. Statistical analysis was performed using the SAS System for Windows Version 9.4, Cary, NC, USA.

Ethical considerations

Under Swedish law (Swedish Health Care Act), it was not necessary to apply to the ethics committee, as there was no physical intervention and no information on individual health issues in the study.^[17] The World Medical Association Declaration of Helsinki^[18] was followed carefully. Health-care professionals' identities were protected, whereby their names and personal identification numbers were not given in any recordings or publications.

Results

One hundred and ninety-six health-care professionals, 47 men and 149 women, took part in this study. The mean age of the men was 40.2 years, while the mean age of the

women was 42.4 years. More than half of all the participants had more than 20 years' work experience [Table 1].

Table 2 shows the results of the questionnaire, comparing the answers between the four different occupations. Regarding the first question about education in using the WHOSSC, most of the subjects said that they had not received any training. In this case, nurse anesthetists were most educated in the question, and they had the highest percentage, 73.7%. Doctors gave the most positive answers, at 44.7%. The WHOSSC has been adapted to the majority of occupational groups and 69.7% of doctors answered this question positively. About 34.4% of nurse anesthetists replied negatively to the second question, in line with the other occupations.

Most of the subjects in all occupations thought that assistant nurses were responsible for making sure that the WHOSSC checklist was used. Most of the doctors (55.4%) and most nurse anesthetists (71.0%) believed that it was the assistant nurses' responsibility. Most of the respondents replied that they did not know who was responsible for implementing the WHOSSC before an operation. Almost

all the doctors (96.1%) were not aware. Only 16.2% of assistant nurses knew who was responsible for using the WHOSSC before an operation. Almost 89.5% of nurse anesthetists were not aware.

The majority of respondents, including 68.4% of nurse anesthetists, replied "all the time" to the question about the frequency of using the checklist in emergency situations. However, one (3%) nurse anesthetists had never used it in emergency situations [Table 2]. Most of the subjects in all the occupations were of the opinion that the WHOSSC improved patient safety. The majority of the doctors (89.4%) totally agreed that the list improves patient safety. Of all the occupations, the nurse anesthetists (13.3%) expressed most doubt about the checklist.

Discussion

This study is the first in Sweden to investigate the relationship between four different occupations and the use of the WHOSSC in the perioperative setting with particular emphasis on one health-care professional group, nurse anesthetists. The questionnaire made it possible to base some parts of it on the checklist and to define the aim of the study.^[19]

The majority of the health-care professionals who completed the questionnaire have between 5- and 20-year work experience. Risk to patient safety may arise due to a lack of experience but also to the presence of older health-care professionals. Surgical safety checklists have been developed to aid compliance with good clinical practice and improve surgical safety, by making it easier to comply with health-care standards and build teamwork and interpersonal communication. This study revealed that nurse anesthetists believe that the WHO checklist is very important for anesthetic and perioperative care and helps to ensure greater patient safety. However, we also found that only 44.7% of the health-care providers had received training in using the WHOSSC. Nurse anesthetists accounted for the highest percentage in this group, at 73.7%. Another study among nurse anesthetists in Sweden revealed that only 43% of them had taken part in training.^[13] In addition, other studies have shown that staff do not follow or use the checklist correctly, possibly because they have not been instructed sufficiently in its use, so more training is needed.^[20,21] In another study, it was pointed out that there is a risk that the use of the WHOSSC will be deficient and implementation will fail unless staff are shown how to use it. It is also important to mention the importance of understanding why the WHOSSC is used and that an understanding of the checklist is achieved.^[22]

Nevertheless, there was a more positive response to the question about the list's adaptation to their department, with doctors (69.7%) giving the most positive responses. A previous study revealed that the surgeon was often

Table 1: Characteristics of health-care professionals

	<i>n</i> (%)
Gender	
Male	47 (24)
Female	149 (76)
Total	196
Workplace	
Workplace 1	107 (44)
Workplace 2	89 (56)
Total	196
Occupation	
Anesthesiologist	36 (18)
Obstetrics	23 (12)
Surgeon	17 (8)
Nurse anesthetist	38 (19)
Surgical nurse	39 (20)
Assistant nurse	43 (23)
Total	196
Age (years)	
21-30	31 (16)
31-40	43 (23)
41-50	55 (28)
51-60	49 (25)
≥60	21 (11)
Total	196
Experience (years)	
≤5	54 (28)
6-10	30 (15)
11-15	22 (12)
16-20	23 (12)
≥20	67 (33)
Total	196

Table 2: Using of the WHO checklist regarding the different occupations

Variables/questions	Doctors (n=76), Nurse anesthetists (n=38),		Operation nurses (n=39), n (%)	Assistant nurses (n=43), n (%)
	n (%)	n (%)		
Have you completed education/training on using the WHO checklist in your department?				
Yes	34 (44.7)	10 (26.3)	15 (38.4)	16 (37.2)
No	42 (55.3)	28 (73.7)	24 (61.6)	27 (62.8)
Has the WHO checklist been adapted to your department?				
Yes	53 (69.7)	25 (65.7)	24 (61.5)	27 (62.7)
No	23 (30.3)	13 (34.3)	15 (38.5)	21 (37.3)
Is it clear who is responsible for ensuring that the WHO checklist is implemented?				
Surgeon	6 (7.8)	5 (13.1)	2 (5.2)	7 (16.4)
Anesthesiologist	4 (5.2)	2 (5.3)	0	0
Nurse anesthetist	12 (15.8)	2 (5.3)	4 (10.3)	3 (6.9)
Surgical nurse	12 (15.8)	2 (5.3)	9 (23.0)	3 (6.9)
Assistant nurse	42 (55.4)	27 (71.0)	24 (61.5)	30 (69.8)
Do you know who is responsible for using the WHO checklist before surgery?				
Yes	3 (3.9)	4 (10.5)	4 (10.2)	7 (16.2)
No	73 (96.1)	34 (89.5)	35 (89.8)	36 (83.8)
How often do you think the WHO checklist is used in emergency situations?				
All the time	49 (64.4)	26 (68.4)	22 (56.4)	19 (44.1)
Often (every second operation)	17 (35.6)	7 (18.4)	14 (35.8)	21 (48.8)
Seldom (every fourth operation)	0	4 (10.2)	3 (7.8)	3 (7.1)
Never	0	1 (3.0)	0	0
Does the WHO checklist improve patient safety?				
Totally agree	68 (89.4)	27 (71.0)	25 (64.1)	31 (72.2)
Partly agree	5 (6.7)	6 (15.7)	9 (23.1)	8 (18.6)
Doubtful	0	5 (13.3)	0	4 (9.2)
Do not agree at all	3 (3.9)	0	5 (12.8)	0

not in the operating room during the WHOSSC process and that the process was delegated to another team member.^[23] Watson's theory^[24-26] of human caring should be more widely used in nursing practice and, in particular, his theory needs to be implemented and maintained more strongly in a situation where the use of lists is flawed, meaning that patient safety may be compromised. The subjects in this study did not even know for certain who was responsible for ensuring that the WHOSSC was used before an operation (83.8%–96.1%), although they all mentioned assistant nurses. Seventy-one percent of nurse anesthetists stated that assistant nurses were responsible for ensuring the use of the WHOSSC. Another study in Sweden reported the same results.^[13] In that study, the authors stated that nurse anesthetists believed that the surgeon himself was the one who should initiate and use the checklist. Nevertheless, our research agrees with this study in that, regardless of beliefs, the assistant nurse is the one who initiates the use of the list in practice. Although the aim is for everyone in the surgical team to initiate, participate, and communicate with regard to the WHOSSC, the study by Rydenfält *et al.*^[12] shows that it is usually the surgeon

and nurse anesthetist who always participate in all WHO checklists.^[12] The fact that different occupational categories participate differently in using the WHOSSC may be because the social aspects of the working environment cause difficulties for different groups when it comes to daring to make their voices heard, the hierarchy, and a good or a poor organization to prevent employees raising potential risks between colleagues. An open, inviting environment is thought to improve the starting point for communication and patient safety is higher.^[19]

In emergencies, between 44.1% and 68.4% of subjects stated that the list is always used. It is, however, worrying that 10.2% of nurse anesthetists stated that it is rarely used and 3.0% said that it is never used in emergency situations. Another study also reported the same thing.^[11] Nevertheless, two more studies show that the WHOSSC is used in emergency pediatric plastic surgery, at a rate of 85%–98% for signing in and time out.^[27] In emergency laparotomies, the WHOSSC was used less often than in elective laparotomies in the most developed countries.^[28,29] However, a high percentage stated that it is used when

children are involved. This raises the question of whether we simply care better for children than adults or whether it is possible to learn how to use the WHOSSC more effectively from those who work with children. In three other studies comparing elective and emergency surgery and care, relatively little variation in using the WHOSSC was observed between surgical specialties or between elective and emergency cases, while a large degree of variation was observed between different hospitals. This probably reflects a variation in the style of checklist implementation between hospitals, the presence of local champions, differences in safety culture, the support and involvement of management, and so on.^[30-32]

The present study also showed that those least involved in using the WHOSSC feel that the WHOSSC most improves patient safety. Almost 89.4% of the doctors believed this, but only 13.3% of the nurse anesthetists. However, other research has also shown that the obstacles to using the WHOSSC are a lack of training in how it should be used, the time needed for it, and the attitudes and values of staff, especially doctors.^[11,12,14,15,33] No checklist is a substitute for professional competence, but professionals should use a checklist. The issue now is how four different health-care professions can use the WHOSSC together when they have conflicting opinions of it.

Study limitations

The study presented here has some limitations. First, the first author of the study is employed in the same department as the majority of participants, and it was the first author of the study who sent E-mails and reminded the majority of participants to respond to the survey. This could, on the other hand, affect those that answered the survey so that they give extra thought when they answer and that this could cause their answers to go in the wrong direction.

Conclusion

The results of this study show that compliance with the WHO's checklist varies and that the observed compliance is lower than documented. The nurse anesthetists, as members of the surgical team, showed the best results in those questions regarding education in using the WHO checklist. The majority use the list all the time in emergency situations and conclude, like other members of the team, that the list improves patient safety. A further understanding of the checklist and its importance, as well as its content, could increase the safety of patients due to improved compliance.

Ethical clearance

Under the Swedish law (Swedish Health Care Act), it was not necessary to apply to the ethics committee, as there was no physical intervention and no information on individual Health issues in the study. The World Medical Association Declaration of Helsinki was followed carefully. Health-

care professionals identities were protected, whereby their names and personal identification numbers were not given in any recordings or publications.

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Conflicts of interest

There are no conflicts of interest.

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