



## Surgery

## A PROSPECTIVE STUDY OF IMPLEMENTATION OF SAFETY CHECKLISTS IN SURGERY

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\*Corresponding Author**ABSTRACT****INTRODUCTION**

“Medicine used to be simple, ineffective, and relatively safe. Now it is complex, effective and potentially dangerous”-----Chantler 1. Humans will skip steps even when they remember them”. This has never been a problem in the past. Complexity of systems have increased beyond what humans can manage globally. More than 235 million surgeries are conducted annually (WHO 2008) which means that every 25th person on the globe is undergoing major surgery every year. According to careful estimations, approximately seven million injuries and one million deaths result from these surgeries 2, 3. Data suggest that half of all surgical complications are avoidable. This yearly volume now exceeds that of childbirth. 3,4 Surgery is performed in every community: wealthy and poor, rural and urban, and in all regions. The World Bank reported that in 2002, an estimated 164 million disability-adjusted life years, representing 11% of the entire disease burden, were attributable to surgically treatable conditions. 3, 5 Although surgical care can prevent loss of life or limb, it is also associated with a considerable risk of complications and death. The risk of complications is poorly characterized in many parts of the world,

**Aims and objectives**

- To sensitize the stake holders and measure the effect of surgical safety checklist in all the patients undergoing major surgical operations.
- To investigate and describe the challenges encountered in the surgical safety checklist usage.
- To enumerate the possible recommendations based on the results achieved and to help improve the adherence to the surgical safety checklist usage.

**Material and methods**

This study will be conducted on 200 consecutive cases undergoing major operations both emergency and elective. 100 cases will be having checklist and 100 cases will be control. Major surgery is defined as all operations done under General/spinal anaesthesia in department of surgery of Maharishi Markandeshwar Institute of Medical Sciences and research, Mullana, Ambala. These all findings will be documented in the proforma thereafter.

**Summary and conclusion**

The impact of surgical safety checklists on patient outcomes is likely to vary with the effectiveness of each hospital's implementation process. Further research is needed to confirm these findings and reveal additional factors supportive of checklist implementation.

**KEYWORDS** : : anaesthesia ,Complexity, research ,surgeries .**Introduction**

Medicine used to be simple, ineffective, and relatively safe. Now it is complex, effective and potentially dangerous”-----Chantler 1. Humans will skip steps even when they remember them”. This has never been a problem in the past. Complexity of systems have increased beyond what humans can manage globally. More than 235 million surgeries are conducted annually (WHO 2008) which means that every 25th person on the globe is undergoing major surgery every year. According to careful estimations, approximately seven million injuries and one million deaths result from these surgeries 2, 3. Data suggest that .half of all surgical complications are avoidable. This yearly volume now exceeds that of childbirth. 3,4 Surgery is performed in every community: wealthy and poor, rural and urban, and in all regions. The World Bank reported that in 2002, an estimated 164 million disability-adjusted life years, representing 11% of the entire disease burden, were attributable to surgically treatable conditions. 3, 5 Although surgical care can prevent loss of life or limb, it is also associated with a considerable risk of complications and death. The risk of complications is poorly characterized in many parts of the world, but studies in industrialized countries have shown a perioperative rate of death from inpatient surgery of 0.4 to 0.8% and a rate of major complications of 3 to 17%. 5,6 After the introduction of World Health Organization's (WHO) surgical safety checklist for utilization in operating rooms in 2008, most studies have reported enormous reduction in postoperative complications, morbidity and mortality rates . 7,8 WHO surgical safety checklist is a 19-point checklist created to reinforce accepted practices and improve teamwork and communication in the operating units (WHO 2008.). Even though there are diverse evidence of its effect on morbidity, mortality and its accelerated application globally, the acceptability of the surgical checklist as a universal safety tool in all surgical procedures has been criticized by some studies and surgical professionals. 3,9. Some studies have challenged the additional benefit of the use of the checklist in developed healthcare setting . 3,9,10 Moreover, most surgical training

and practice had been geared towards technical skills and technological improvement whereas limited attention is paid to the benefits of non-technical skills (human factors). 2,3,10 However, majority of the errors that may occur during surgery can be attributed to failures in these non-technical skills such as situation awareness, decision-making, communication teamwork and leadership that checklist aims to improve. Medical mishaps and errors are rarely the result of incompetence, poor motivation or negligence but challenges on social and cognitive skills such as loss of situation awareness, poor communication, less than optimal teamwork, problematic stress management, and memory overload. Realising how prone we as humans are for short term memory loss, it is striking how many potentially dangerous medical procedures are based on “perfect memory”

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**Materials and methods:**

Statistical process control (SPC) is chosen as a prospective approach to measure the effect of the locally modified surgical checklist implementation in 200 cases undergoing major surgical operations in MMMSR, Mullana.

**Observations**

In our study mean age of sample population was 40.39 years with standard deviation of 13.19 years. The minimum age of the study participants was 1 year whereas the maximum age of the patients was 76 years. The range of the age for study participants was 75 years.

Majority of the patients undergoing Surgery i.e. 66 (33%) were in age group of 35 to 40 years, followed by 42 (21%) patients each in less than 35 years of age and in the age group of 41 to 45 years. Twenty seven (13.5%) were in age group of 30 - 50 years followed by 23 (11.5%), in the age group of 46 to 50 years. About three fourth i.e. 145 (72.5%) of the patients undergoing surgery were males compared to 55 (27.5%) females.

Surgical checklist was applied on 100 (50%) patients whereas on rest 100 (50%) patients no surgical checklist was administered.

Among surgical patients on whom surgical safety checklist was applied, majority i.e. 60 (60%) were males whereas 40 (40%) were females.

Among patients on whom surgical safety checklist was not applied, majority i.e. 85 (85%) were males followed by 15 (15%) female patients. This association was found statistically significant (P value < 0.05). Among surgical patients on whom surgical safety checklist was applied, confirmation of procedure before surgery was done for all i.e. 100 (100%) patients. Among patients on whom surgical safety checklist was not applied, for majority i.e. 89 (89%) confirmation of procedure was done whereas confirmation of procedure was not done for 11 (11%) patients. This association was found statistically significant (P value < 0.05). Among surgical patients on whom surgical safety checklist was applied, complication related to surgery was found only in two patients whereas among patients on whom surgical safety checklist was not applied, complications developed in five patients.

This association was found statistically non significant (P value = 0.248).

**Discussion**

For surgical safety checklist application foremost requirement is to identify the correct patient therefore in the present study 100 patients where surgical safety checklist was applied; confirmation of identity in all the patients was undertaken beforehand but only in 93% cases it was done in other group, whereas confirmation was not done for 7% patients. This association was found statistically significant (P value < 0.05) and therefore this made 7% patients of this control group vulnerable to fatal error of operating on wrong patient which could have led to potential medico legal problems for both operating team and the institution. The Healthcare Insurance Reciprocal of Canada reports suggests that surgical claims claim types like 210 retained foreign body; 94 wrong body part; and 9 wrong patient account for \$27 Million, 40% could have been prevented with the checklist or approximately \$10 Million. 51 Author's guide has personal knowledge of a case when he was a postgraduate student in one of India's premier post graduate medical institution where a patient of viral fever was mistakenly taken in the operation theater instead of patient who had to undergo peri-anal abscess drainage surgical safety checklist if it would have been used or was in voyage at that time could have prevented such incident. Study by Alitoo et al in Pakistan, of the 103 surgeries observed, 13 (13.4%) patients did not confirm their identity. 13 In a similar study of the National Patient Safety Agency (U.K.) safer practice notice on 22 November 2005 in a report carried on wrist bands between Nov 2003 and July 2005 it came out clearly that the same improved inpatient safety. It reported 236 incidents and near misses related to missing wristband or wristbands with incorrect information. Misidentification was cited in 100 individual root cause analysis by the United States department of Veterans Affairs National Centre for Patient Safety from Jan 2000 - March 2003. 107

The above results thus, emphasize the importance of the conformant of

the patients identity as proposed by the WHO about the standard SSCL.

The study continues that this check is being routinely practiced & confirmed in our set up. The one patient that did not comply with the checklist was a near miss it however did not result in any further complication or adverse event. Due to the increased work load and being short staffed in the rural setup, in which we perform; there could have been chances of some hand over problems or any other miscommunication. Patient misidentification is the root cause of many errors. Thus, its inclusion in the safety checklist is necessary and is rightly the pilot point of inclusion in the checklist.

Continuation of site/procedure before surgery was carried out in all the cases, i.e. 100 (100%) patients. Among patients on whom surgical safety checklist was not applied, 89 (89%) confirmation of site/procedure was done whereas confirmation of site/procedure was not done for 11 (11%) patients. This association was found statistically significant (P value < 0.05).

Among surgical patients on whom surgical safety checklist was applied, continuation of site before surgery was done for all i.e. 100 (100%) patients. Among patients on whom surgical safety checklist was not applied, for majority i.e. 85 (85%) confirmation of site was done whereas confirmation of site was not done for 15 (15%) patients. This association was found statistically significant (P value < 0.05).

In a similar study by Alitoo et al in Pakistan, out of the 103 surgeries observed,

13 (13.4%) patients did not have a confirmation of their site of surgery. 13 In a study by Kasatpibal N et al in Thailand, only 19.4% of the surgical sites were marked. 128. Over 30 months, there were 427 reports of near misses (253) or surgical interventions started (174) involving the wrong patient (34), wrong procedure (39), wrong side (298), and/or wrong part (60); 83 patients had undergone incorrect procedures on the lower extremities were the most common (30%).

Kwaan et al 133 evaluated wrong-site surgeries and in a report to a large medical malpractice insurer between 1985 and 2004, determined that the incidence, based on claims and excluding spinal surgery, was 1 in 112,994 procedures.

**Summary and conclusion**

Checklists improve outcomes with no increase in surgical skill.

1. Checklist improves outcome with no increase in surgical skill.
2. A checklist is not a teaching tool or an algorithm
3. Helps to overcome shortcoming of human memory and attention.
4. Safe surgery not only saves life of the patient but also keeps the surgeon out of legal implications.
5. Intended to give teams a simple, efficient set of priority checks for improving effective teamwork and communication.
6. Intended to encourage active consideration of the safety of patients in every operation performed.
7. Important to avoid the phenomenon of "tick and flick".
8. Responsibility for implementing and ensuring adherence to all components rests with one or more representatives from surgeon, anesthesiologist, and nursing.
9. In future, you can expect your patients to ask about that the checklist to be used for their operations. It is every surgeon's duty and responsibility to do so.
10. It helps to ensure consistency and completeness in carrying out a task.

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