

The use of the who surgical safety checklist-part one: the state of the art in an operating theater in Basrah

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ABSTRACT

Background: This is a prospective study carried out at one of the main operating theaters in Basrah general hospital. The study lasted for 6 months (from May to October 2013).

Objectives: The aim was to assess the adherence of staff in the operating theater to items of services covered by a World Health Organization Checklist. The study is in line with the vision of the Ministry of Health to provide high quality care.

Method: A structured questionnaire form was prepared for the purpose of the study. It was based on the World Health Organization checklist; first edition. Observation of all procedures, instructions and labeling of patients before, during and after the surgical operation was made. A total of 378 surgical operations (patients) were covered in the study

Results: The degree of adherence to the various items of the checklist (28 items) varied greatly. Items with high adherence rate (> 90%) were those related to documentation of age, gender, informed consent, shortness of breath and patient recovery checking. Items with fair documentation (70-90%) were those related to next of kin, mobile phone number, history of chronic disease, time of last meal, allergy to anaesthesia, post-operative checking of certain equipment, preparation of blood and prophylactic antibiotics and biopsy handling. All other items were of poor adherence.

Conclusions: The adherence to the requirements of the surgical safety check list was fair but further improvement in its use is required to enhance quality of care.

Key words: Safety checklist, Basrah, adherence, quality of care

استخدام قائمة السلامة الجراحية لمنظمة الصحة العالمية: الحالة الراهنة في احدى مستشفيات البصرة الخلفية: البحث الحالي يمثل دراسة متابعة أجريت في احد صالات العمليات الرئيسية في مستشفى البصرة العام واستمرت لمدة ستة أشهر (أيار- تشرين أول 2013)

الأهداف: قياس مدى التزام العاملين في صالة العمليات الجراحية بقائمة السلامة المعتمدة من قبل منظمة الصحة العالمية والبحث ينسجم مع رؤية وزارة الصحة لضمان خدمات عالية الجودة.

الطرائق: اعتمدت الدراسة على مراقبة أداء العاملين قبل وأثناء وبعد العملية الجراحية ودونت البيانات على استمارة تحتوي صيغة خاصة معدلة معدة من الطبعة الأولى من قبل منظمة الصحة العالمية من قائمة السلامة الجراحية. وقد شملت الدراسة 378 عملية جراحية.

النتائج: تبين الالتزام بمفردات قائمة السلامة بدرجة كبيرة حيث بلغ في بعض المفردات نسبة عالية (أكثر من 90%) مثل توثيق العمر والجنس والموافقة الواعية والسؤال عن عسر التنفس وحالة المريض بعد العملية مباشرة. أما المفردات التي أظهرت درجة التزام متوسطة (70-90%) فشملت توثيق اقرب الأشخاص للمريض ورقم الهاتف النقال والسؤال عن الأمراض المزمنة وآخر وجبة طعام وأي تحسس من المواد المخدرة والاستعداد لنقل الدم واستخدام المضادات الحيوية الوقائية وتدقيق الأدوات الطبية والاهتمام بالعينات النسيجية. أما الفقرات الأخرى فقد كان الالتزام بها ضعيفا.

الاستنتاجات: يمكن اعتبار درجة الالتزام بتطبيق مفردات قائمة السلامة الجراحية معقولة في البصرة الا أن الحاجة ما زالت قائمة لتطوير درجة الالتزام والأداء الأفضل.

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INTRODUCTION

Failures in practical life and in medical situations occur when persons in charge of a given task or set of tasks, like surgical operations, fail to adhere to predefined rules and guidelines or when these guidelines are not existing at all.^[1]

Surgical care is an integral part of health care throughout the world, with millions of operations performed annually and surgical operations are not accidents but medical situations amenable to undesired outcomes. The World Bank reported that in 2002, for example, an estimated 164 million disability-adjusted life-years, representing 11% of the entire disease burden, were attributable to surgically treatable conditions.^[2] Surgical care can be designed to improve health of individuals but, it is also associated with a considerable risk of complications and death. Thus, surgical care and its attendant complications represent a substantial burden of disease worthy of attention from the public health community worldwide,^[3] and from the people involved in the care itself. Data suggest that at least half of all surgical complications are avoidable. Previous efforts to implement practices designed to reduce surgical-site infections or anesthesia-related faults have been shown to reduce complications significantly. A growing body of evidence also links teamwork in surgery to improved outcomes, with high-functioning teams achieving significantly reduced rates of adverse events.^[2] Preliminary assessment of surgical practice within the immediate boundaries of operating theaters is a pre-requisite to the implementation and evaluation of complex interventions, such as the team checklist proposed by the World Health Organization (WHO), which seeks to change team members' behavior.^[3] Researchers have advocated a phased approach to such complex interventions to ensure their acceptability and feasibility before full implementation.^[4] Although surgical operations are expected to be safe, patient-

centred and efficient, errors are inevitable in normal life situations.^[5] In 2009, the WHO issued a worldwide recommendation for the use of its **Surgical Safety Checklist** in all operative procedures which was effectively used.^[6] The surgical safety checklist is simple, practicable and feasible inexpensive tool to use in assessing patient care from admission for surgical operation to the recovery period. Given the trend adopted by the Iraqi Ministry of Health to achieve high quality care in various components of the health care system in Iraq, it was thought useful to consider carrying out a study which explore the quality of care in operating theaters in Basrah hospitals and to explore the effect of verbal and written instructions on the use of the WHO safety checklist. A study was designed to measure the extent to which various parties involved in surgical operations for cold scheduled cases are adherent to the tasks listed in the WHO Safety Checklist.

PATIENTS AND METHODS

The study was carried out within the operating theaters of Basrah General Hospital. This hospital is one of teaching hospitals in Basrah. It is a multispecialty secondary medical care institution, located almost in the centre of Basrah city and serving a large catchment population. The Data collection phase of the study extended for a period of 6 months from May to October 2013. Patients who were admitted to operative theatre in Basrah general hospital, department of general surgery who were seen on specific days of the week by the researcher were included. The work plan consisted of full observation of patients enrolled and recording data on each using a special form prepared (with few modifications) on the basis of the (WHO safety Checklist). The observation starts at the moment the patient was brought to the waiting room until two hours post-operatively. The investigator stayed with the

staff of the operating theater for a full morning in selected days of the week. Patients observed were operated on by a number of surgeons and not restricted to one particular surgeon or particular surgical condition. However, the study did not involve emergency cases but was meant to be done on normal elective surgical operations. Observation of procedures, instructions and labeling of patients before, during and after the surgical operation was made and data were recorded on special questionnaire form. A total of 378 patients who were admitted to the surgical wards and arranged to undergo different surgical procedures were included in this study. On each patient, data were collected on labeling and documentation of name, age, gender, next of kin, mobile phone number, patient tag, informed consent, history of chronic disease, last meal, drug intake, verification of preoperative investigations, operative site marking, history of allergies to drugs, history of shortness of breath, anticipation of blood loss, surgical team availability, need for prophylactic antibiotics, Explanation of operation to patient, checking of packs, cotton and instruments after operation is finished, written operation notes, post-operative instructions, biopsy taking and handling, patient recovery, and complications during and within two hours postoperatively. Data were fed on computer software (SPSS: Statistical Package for Social Science version 15). After thorough checking, data were analyzed in the form of descriptive tables.

RESULTS

Documentation of selected patient attributes

(Table-1), shows that almost all patients have their age and gender documented. The next of kin was documented in 75.1% and the number of mobile phone in 71.1%. Skin tag was available only in 28.3% but informed consent was well written and signed in 96.0%.

Table 1. Documentation of selected patient attributes

Variable	No.	%
Age		
Documented	377	99.7
Not documented	1	0.3
Gender		
Documented	376	99.5
Not documented	2	0.5
Next of kin		
Documented	284	75.1
Not documented	94	24.9
Mobile phone number		
Documented	271	71.7
Not documented	107	28.3
Patient tag		
Available	107	28.3
Not available	271	71.7
Informed consent		
Done well written	363	96.0%
Written unsigned	11	2.9%
Not written	4	1.1%

Documentation of selected medical histories

(Table-2), shows the results related to documentation of selected medical histories. None of the items was totally documented. Marked variation exists, ranging from the lowest documentation in history of anticoagulant drug (51.5%) to as high as 80.2% in case of history of chronic disease and the last meal.

Table 2. Documentation of selected medical histories for eligible patients.

Variable (no. of patients)	No.	%
History of chronic disease (378)		
Asked	303	80.2
Not asked	75	19.8
Last meal (378)		
Asked	303	80.2
Not asked	75	19.8
Anti coagulant use for eligible patients(356)		
Asked	182	51.1
Not asked	174	48.9
Steroid use for eligible patients (355)		
Asked	188	53.0
Not asked	167	47.0
Contraceptive pills use by adult females only (174)		
Asked	116	66.7
Not asked	58	33.3
N.S.A.I.D use for eligible patients (353)		
Asked	210	59.5
Not asked	143	40.5

Documentation of selected preoperative tasks

A number of preoperative tasks are expected to be done and documented. These are shown in (Table-3). The documentation was generally fair but varied from as low as 23.3% in surgical site marking to as high as 96.0% in case of attendance of surgical team, 88.1% in case of asking about allergy to anaesthetic drug and 91.8% in asking about history of shortness of breath. The documentation rates for other items are in between these values.

Table 3. Documentation of selected preoperative tasks.

Task	No.	%
<u>Preoperative investigations</u>		
Done and available	248	65.6
Done not available	25	6.6
Partially done	61	16.1
Not adequately done	44	11.6
<u>Surgical site</u>		
Marked	88	23.3
Not marked	290	76.7
<u>Allergy to anaesthesia</u>		
Ascertained/ documented	333	88.1
Not ascertained	45	18.9
<u>Shortness of breath</u>		
Ascertained	347	91.8
Not ascertained	31	8.2
<u>Blood loss anticipation and preparation</u>		
Blood loss not anticipated	282	74.6
Blood prepared, matched and available	7	1.9
Blood, prepared, matched but not present.	41	10.8
Blood prepared but not well labeled or matching not documented.	48	12.7
<u>Prophylactic antibiotics for eligible patients</u>		
Needed and given	111	76.6
Needed not given	34	23.4
<u>Surgical team</u>		
All team present	363	96.0
Not all team present	15	4.0
<u>Operation explanation</u>		
Adequate	260	68.8
Not adequate	113	9.9
No explanation at all	5	1.3

Documentation of postoperative tasks

Also great variation was noticed in the rates of documentation of postoperative tasks (Table-4). Good documentation was noticed in pack and instruments calculation (81.0%), in operative

notes (83.3%) in biopsy taking and labeling (89.4%) and in patient recovery checking (90.5%). Poor documentation was seen in postoperative instructions (37.6%), in surgical device checking (22.0%) and in documentation of postoperative complications.

Table 4. Documentation of selected postoperative tasks.

Task (no. Of patients)	No.	%
<u>Pack and instrument calculation (378)</u>		
Done	306	81.0
Not done	72	19.0
<u>Operative notes (378)</u>		
Written clearly	315	83.3
Written but not clear	63	16.7
<u>Postoperative instructions (378)</u>		
Present and adequate	142	37.6
Present not adequate	232	61.4
Not present	4	1.1
<u>Biopsy taking (227)</u>		
Proper	203	89.4
Nor proper	24	10.6
<u>Surgical device checking (378)</u>		
Done	83	22.0
Not done	295	78.0
<u>Patient recovery (378)</u>		
Adequately done and documented	342	90.5
Not adequately done and documented	36	9.5
<u>Intra operative complication (378)</u>		
occurred and not documented	12	3.2
Did not occur	366	96.8
<u>2 hour post operative complication (378)</u>		
occurred and not documented	6	1.6
Did not occur	372	98.4

DISCUSSION

Despite the new advances and technology in surgical practice in the last 50 years, still minimal considerations have been given to the analysis of team dynamics and behavioral interactions in the operative theatre. Surgical safety checklist which was recommended by the World Health Organization was designed to be used, wherever surgical procedures were done, as an easy and rapid way to review the patient health state and in the other direction the operative room and surgical plus anesthesiology teams competency. In the absence of regular auditing in Iraqi hospitals, it would be expected that the use of safety checklist including the WHO one is intermittent and sporadic for most

items required to be covered. The present study is the first in Basrah to evaluate the use of safety checklist in operating theaters. The study is an explorative in its nature. The study should not be considered ideal in design, conduct and results but the researchers believe that it provides sufficient evidence about the quality of surgical care at one major operating theater in one of the major hospitals in Basrah. The results could be generalized to other theaters in Basrah but with some reservation. The situation in other theaters, though expected to be similar in the level of practice, but differences could be present due to the effect of doctors, management and other determinants. Before giving anesthesia, it is expected that the identity of the patient, the consent, the special related points in history, the investigations, the operative site marking, the allergy to anesthetic drugs, the history of shortness of breath, the anticipation of significant blood loss, the need for prophylactic antibiotics, the presence of whole surgical team, and the clear explanation of detailed surgical procedure to the patient are all carried out and documented. The present study revealed great variations in documentation of the various tasks listed above. Regarding patient identity, the documentation was excellent. However, the documentation of next of kin and communication means (mobile phone) was not adequate. The avenue for improvement is big and worth considering by care providers. It is vital some times to have quick communication with patient relatives for any reason and therefore the availability of written information to facilitate such communication is mandatory. The use of patient tag was very poor and documented in only 28.3% of the patients. The lack of skin tag might lead to mistaken patients for specific surgical procedures. In a study done in Sulaimaneyah, Iraq in Hatwan hospital, the documentation of patient tag was much higher than the results in the current study.^[7] On the other hand 'written and signed informed consent was very high in the present the study. Only in

few cases, informed consent was missing or not signed. The result is similar to the study carried out in Sulamaneyah.^[7] The results are also similar to the results of a study carried out in Germany to monitor the sustainability of adherence to safety checklist, in which they found a high rate of initial adherence but significant attrition was observed with time.^[8] The high rate of adherence to documentation of consent is a reflection of the legal consequences of any undesired outcomes of surgery. When patients sign consent, they share the responsibility with surgeons and other medical staff. Documentation of medical histories was generally inadequately adhered to. The performance is not up to the standard in almost all the tasks covered. The inquiry about history of chronic disease and about last meal was relatively high, whereas the performance in other items was low. The results of the present study with respect to items of medical history are similar to those reported in the Sulaimaneyah study in which they also observed relatively low performance in these tasks.^[7] The section covering selected preoperative tasks showed great variability in the documentation of the tasks covered, with the highest documentation was for availability of surgical team (96.0%), ascertainment of shortness of breath (91.8%) and allergy to anaesthetic drugs (88.1%) and lowest for surgical site marking (23.3%). The implication for not adhering to some of these tasks is clear. Errors in surgical site is expected and definitely harmful regardless of its frequency. It was very unexpected indeed, to find how frequent was the patients were admitted to the operating room with no surgical site marking. This point need to be taken seriously by respective authorities to encourage the complete use of safety checklist. Evidence from the German Study which showed positive, clear and statistically significant improvement in marking of the surgical site after checklist implementation supports our view in this context.^[8] In general post-operative performance was acceptable but

not optimal. Two tasks were adequately handled; taking and labeling biopsy (89.4%) and patient recovery checking (90.5%). However, still in a substantial proportion of cases proper checking of surgical devices status was missing a fact which does not guarantee against faults that might result from delaying the next surgical operation. Also post-operative instructions were not adequate in substantial proportion of cases. These results are consistent with the results of a comparative study carried out in the United States of America^[9] which showed that reduction in overall adverse event (missed pack, or surgical instrument) rates from 23.60% for historical control cases and 15.90% in cases with only team training, to 8.20% in cases with complete checklist use. Thus any minor non-counting of these items after the completion of the operation carries a risk, regardless of its magnitude, of forgetting something inside the surgical wound. Similarly and despite fair adherence to operative notes writing, unclear hand writing are still noticed in about 9.2% of operations. The clear well organized hand writing of operative notes is a reflection of quality of care and helps to verify any complaints which may be raised later on for any reason. The quality of documentation of instructions and treatment details is still poor in our view. At least in 56.9% of the notes, there was deficiency in clarity and completeness. Compared to the results of the study carried out in the United States of America, the results in our hospitals are far from perfect. They reported a proper documentation rate much higher and much better than the rate which we obtained in the present study. Only in 2.7% of their cases, documentation was considered inadequate.^[9] It is clear that the introduction of the safety checklist in an active manner to both surgical and anesthesiology teams in daily surgical practice in local operative theatre should be of value in decreasing the perioperative missing with subsequent improvement in quality of care at least in terms of proper adherence to required tasks. Patient safety and probably more

cooperation and communication among all teams in the operative theatre must be better and in the correct direction of high quality care when the safety checklist is adopted. This view is supported by the results of many studies on various components of the checklist.^[10-15] In a study in Saudi Arabia,^[10] which clearly indicated that the application of the safety checklist to 11828 patients resulted in error-free outcomes and a continuous quality improvement in process aimed at providing the best available at the time in healthcare. They recommended its adoption by healthcare providers. In their view, the WHO surgical safety checklist was a bold step in the right direction towards safer surgical outcomes. Evidence from a number of studies across Europe^[11-15] did support its use also to help improve quality of care. We, in the light of the present study, also recommend the use of such list and stress that adherence to assigned tasks before, during and immediately after surgical procedures must be mandatory and carried out with high accountability and faith by all parties involved in patient care.

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