

Compliance of health care providers with perioperative patient safety guidelines in a general hospital in Cairo

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Abstract

Background: Perioperative patient safety became an utmost priority all over the world. Commitment of the health care providers (HCPs) to patient safety guidelines can decrease the rate of perioperative morbidity and mortality. **Objective:** This work aims to assess the degree of compliance of health care providers - in Police hospital in Cairo- with the patient safety guidelines and to study the effect of work load on degree of compliance. **Materials And Methods:** A descriptive study was conducted on 305 patients who had undergone surgeries in 3 operating rooms of Police hospital in Cairo during duration 3 months from 16-4-2014 till 14-7-2014. WHO safe surgery checklist was used to check if health care providers were compliant to its items or not. **Results:** Health care providers in operation rooms of Police hospital in Cairo showed compliance with the WHO safe surgery checklist items as the following: mean compliance of the Sum “Total score” is (73.85 %) while the stage of the highest mean was stage I “sign in” with mean (81.66%) and the stage with the lowest mean was stage II “SSI bundle” with mean (52%). Stage III “time out” & stage IV “sign out” shows mean compliance of 74.94 % & 67.05 % respectively. Providers with higher work load had lower compliance with some safety items. **Conclusion:** Health care providers working in the operation rooms of police hospital in Cairo show aspects of low compliance with the WHO safe surgery checklist , they need to be aware of the importance of patient safety guidelines and to put a plan to increase their compliance in Police hospital in Cairo with the WHO safe surgery checklist. Decreasing workload can improve compliance regarding some safety items

Key Words: Patient Safety, Compliance, workload, WHO Safe Surgery Checklist.

Introduction

Surgery is defined as an invasive operative procedure in which skin or mucous membranes and connective tissue is incised or an instrument is introduced through a natural body orifice⁽¹⁾. Phillips 2004, defined ‘Perioperative’ period as it refers to the total surgical experience and includes pre-, intra- and postoperative phases of the patient’s surgical journey , the

perioperative period is from the minute the patient arrives in through the operating theatre doors to the moment they leave through those same doors post-procedure⁽²⁾.

Patient safety is defined as avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery. Various definitions of patient safety have

been published, and probably the shortest description is to do no harm to the patients⁽³⁾. Patient safety is a global issue affecting all countries at all levels of development. So understanding the magnitude of the problem and the main contributing factors is essential in order to devise appropriate solutions⁽⁴⁾.

Data from 56 countries showed that in 2004 the annual volume of major surgery was an estimated 187–281 million operations, or approximately one operation annually for every 25 human beings alive⁽⁵⁾. This is a large and previously unappreciated volume with significant implications for public health. It is almost double the annual volume of childbirths— in 2006, there were approximately 136 million births⁽⁶⁾— and is at least an order of magnitude more dangerous. While the rates of death and complications after surgery are difficult to compare since the case mix is so diverse, in industrialized countries the rate of major complications has been documented to occur in 3–22% of inpatient surgical procedures, and the death rate 0.4–0.8 %^(7, 8). Studies in developing countries suggest a death rate of 5–10% associated with major surgery⁽⁹⁻¹¹⁾, and the rate of mortality during general anesthesia is reported to be as high as 1 in 150 in parts of sub-Saharan Africa. Infections and other postoperative complications are also a serious concern around the world⁽¹²⁾.

Avoidable surgical complications thus account for a large proportion of preventable medical injuries and deaths globally. Adverse events have been

estimated to affect 3–16% of all hospitalized patients, and more than half of such events are known to be preventable⁽¹³⁻¹⁶⁾. Checklists have been used successfully in a number of health-care specialties, such as intensive care, anesthesia and surgery. Their use in health care has met with some skepticism, and resistance to their use stems in part from the perception that they undermine the professional autonomy of clinicians⁽¹⁷⁾. In a study of the WHO Surgical Safety Checklist developed as a practical tool for implementing these guidelines, complications were reduced by over one third and deaths cut by nearly 50% in eight pilot hospitals representing a variety of economic circumstances and diverse patient populations⁽¹⁸⁾.

There is increasing recognition that both patient safety and access to high quality healthcare is linked to healthcare worker well-being¹⁹. Many healthcare professionals feel fatigued, stressed, overburdened, at risk and/or in pain and do not feel able to provide consistent quality care⁽²⁰⁾

So the study of effect of high work load that can affect healthcare provider well-being on compliance with safety guideline would be of benefit

This work aims to assess the degree of compliance of health care providers - in Police hospital in Cairo- with the patient safety guidelines and to determine the relation between work load and degree of compliance of health care provider with safety guidelines

Subjects and methods

Study Design and setting: A cross sectional study was conducted at Police authority hospital's operation rooms. There are 3 operation rooms, about 10 operations are done per day, surgical operations are done 6 days per week, average total operations per month = 240 operations. Data collection was carried out for a period of 3 months from 16-4-2014 till 14-7-2014.

Subjects and Sampling: The population size was the total number of patients who had undergone surgery in three months (720 patients) and with margin of error at 5%, confidence level at 95% and the response distribution of 50%. Estimated sample size is 251 to be round to 300 patients. **Sampling:** All patients undergoing surgeries in Police Authority hospital's operation rooms were checked the sample was taken over 3 months. **Exclusion criteria:** Emergency surgeries were excluded from the study.

Methods: The whole study sample was checked for perioperative patient safety items using *the WHO surgical safety checklist which include (WHO, 2009):*

**Communication skills between health care members.*

**Identifying the patient's identity, surgery site, procedure and written consent.*

** Checking anesthetic & surgical equipment, instruments (sponge and needles)*

** Reviewing the key concern for patient recovery and management.*

** Surgical Site Infection (SSI) BUNDLE, which include the following items:*

1- Hair removal at the surgery site.

2- Appropriate antiseptic agent and technique for skin preparation.

3- Maintenance of patient normo-thermia.

4- Controlling blood glucose level.

5- Perioperative prophylactic antibiotic.

6- Operation room traffic.

The Checklist divides the operation into different phases, each corresponding to a specific time period in the normal flow of a procedure — the period before induction of anesthesia (Sign In) which include the surgical site infection “SSI” bundle, the period after induction and before surgical incision (Time Out), and the period during or immediately after wound closure but before removing the patient from the operating room (Sign Out).

Checklist items were checked to ensure whether it has been performed, not performed or not applicable. Therefore, during “Sign In” before induction of anesthesia, the patients were reviewed that his or her identity has been confirmed, that the procedure and site are correct and that consent for surgery has been given. The operative site was visually confirmed that it has been marked (if appropriate) and that a pulse oximeter is on the patient and functioning, then reviewed if the anesthesia professional had checked (in written notes) the patient's risk of blood loss, airway difficulty and allergic reaction and whether a full anesthesia safety check has been completed.

For “Time Out”, the team members were checked if they paused prior to the skin incision to confirm out loud that they are performing the correct operation on the correct patient and correct site. Checking also if prophylactic antibiotics have been administered within the previous 60 minutes and that essential imaging is displayed, as appropriate.

For the “Sign Out”, the team is checked if they reviewed together the operation that was performed, completion of sponges and instrument counts and the labeling of any surgical specimens obtained, also checked if any equipment malfunctions or issues that need to be addressed had been reviewed by the team. Finally, the checking if the team reviewed the key plans and concerns regarding postoperative management and recovery before moving the patient from the operating room (Debriefing).

Ethical considerations:

Approval of the ethical committee at faculty of medicine, Ain Shams University was obtained. Administrative approval at work site and a written informed consent from each patient were obtained

Data management and Statistical analysis

Data were statistically described in terms of mean \pm standard deviation (\pm SD), or frequencies (number of cases) and percentages when appropriate. Fisher exact test was used to compare between qualitative variable. P values less than 0.05 was considered statistically significant. All statistical calculations were done using computer programs *SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA)* version 19 for Microsoft Windows.

Results:

The results of this study as regard compliance of the health care providers (surgeons, anesthetists and nurses) working in the 3 operation rooms of Police hospital in Cairo with the WHO safe surgery checklist - 305 patients had

undergone different procedures. Procedures were managed by 10 surgeons, 3 anesthesiologists and 7 nurses. Table (1) showed that the maximum score (34 from total 40 which represents 85% of the total score) was achieved in only 1 procedure and the minimum score (22 of total 40 which represents 55%) was also achieved in 1 procedure only while the most frequent score was 31 which represents 77.5% of the total score and it was achieved in 40 procedures from total 189 procedures included in the Total Score. The mean \pm SD of the total score was 29.54 ± 2.24 while the mean \pm SD of the total score percent was $73.85 \% \pm 5.6\%$.

As regard compliance of the health care providers to each stage of the WHO safe surgery checklist, Figure (1) showed that the mean percent of the total score was 73.8 % while the stage of the highest mean was stage I “sign in” with a mean score (81.7%) and the stage with the lowest mean was stage II “SSI bundle” with a mean score (52%). The mean score of stage III “time out” & stage IV “sign out” was 74.9% & 67.05% respectively.

The results of the study as regards compliance of health care providers to each item of the WHO safe surgery checklist items, most items showed good compliance while items of low compliance were : in stage I “sign in”, table (2) showed that items of low compliance were: briefing (100% not checked) , patient confirmed his consent (45.2% not checked) , patient allergy (39.3% not checked) and instruments sterility (27.9 % not checked) while in stage II “SSI bundle”, table (2) showed that items of low compliance were: blood glucose level control (100% not

checked) , maintenance of patient normothermia (84.3% not checked) , operating room doors closed unless necessary (50.5% not done) and prophylactic antibiotics (34.8% not checked) while in stage III “time out”, table (3) showed that items of low compliance were : nurse checked patient position (100% not checked) , surgeon checked patient procedure (67.2% not checked) , nurse checked surgical site (63.6% not done) and anesthetist checked surgical site (30.5% not checked), while in stage IV “*sign out*”, table (3) showed that debriefing item only show low compliance (100% not checked) .

Figure (2) showed that that the mean compliance of anesthetists was (85.3%) which represented the highest compliance to the WHO safe surgery checklist among the health care providers in Police hospital working in the operation rooms while nurses showed the lowest compliance (65 %) .

Table (4) describe workload among Health Care Providers (HCP), which shows that the highest number of procedures (22.6%) were done by surgeon number 8, while for anesthesiology, anesthetist number 1 did the highest number of procedures (37%) ,and for nurses , it was shown that nurse number 1 did the highest number of procedures (20.7%) .

As regard compliance of surgeons to checklist’s items related to their work, the item (surgeon checking patient procedure) shows poorest compliance, among the whole surgeons as 67.2% of procedures are not checked. Item “surgeon checked surgical site” shows good compliance among the whole surgeons (only 15.1% of procedures not

checked) but some individual poor compliance can be seen as surgeon 8 show poorest compliance (42.9%) who had the highest work load.(data non tabulated)

Table 5 shows that nurses have poor compliance to item “sharps count completed” as it was not checked in 22.6% of procedures. There is individual poor compliance as nurse No. 1 (which had the highest work load) has a highly significant poorer compliance compared to other nurses($p<0.01$)

For anesthesiologists, they have good compliance to all items as total but some individual poor compliance can be seen, as anesthetist NO. 1 has poor compliance to item “patient allergy” as in 92% of procedures it was not checked

Discussion

Assuming a 3% perioperative adverse event rate and a 0.5% mortality rate globally, almost 7 million surgical patients would suffer significant complications each year, 1 million of whom would die during or immediately after surgery. Surgical safety has therefore emerged as a significant global public health concern. Just as public health interventions and educational projects have dramatically improved maternal and neonatal survival⁽²¹⁾. The impact of these errors has led hospitals and regulatory agencies to focus on reducing the number of deaths and adverse events attributed to unintended and preventable medical errors⁽²²⁾.

Patient safety is a healthcare discipline that emphasizes the reporting, analysis, and prevention of medical error that often leads to adverse healthcare events. The frequency and magnitude of

avoidable adverse patient events was not well known until the 1990s, when multiple countries reported staggering numbers of patients harmed and killed by medical errors. Recognizing that healthcare errors impact 1 in every 10 patients around the world, the World Health Organization calls patient safety an endemic concern ⁽⁴⁾.

This study aims to measure the compliance of HCP - working in operation rooms of Police hospital in Cairo- to safe surgery guidelines, and to study effect of work load on their compliance, also to measure the communications between them that will be a fundamental guide to improve the hospital outcome and increase safe surgery practice in the future.

In the current study, health care providers participating in 305 different surgical procedures were studied for their compliance to the WHO patient safety checklist after informed consent were obtained from the patients. The WHO safe surgery checklist divides the operation into three phases, each corresponding to a specific time period in the normal flow of a procedure — the period before induction of anesthesia “Sign In” which include the surgical site infection" SSI" bundle, the period after induction and before surgical incision “Time Out”, and the period during or immediately after wound closure but before removing the patient from the operating room “Sign Out”

In this study , as regards the total score of compliance of health care providers (surgeons, anesthetists & nurses) to the WHO safe surgery checklist for each procedures, the maximum compliance was 85% from the total score while the lowest compliance was 55%, where the

mean compliance \pm SD was 73.8% \pm 5.6% , while *Sparks, Wehbe-Janek et al., 2010*⁽²³⁾ in a study conducted on 671 procedures done in their institute studying the compliance to WHO safe surgery checklist “SSC”, Random samples of SSCs were analyzed at specific, predefined & time points throughout the first year after implementation of the checklist. Procedure start time, operative time, and case complexity were assessed to determine association with compliance. Their study showed that mean \pm SD of the compliance to WHO checklist was 69.3% \pm 13.5%.

In this study, as regards the compliance to Sign In period, the mean \pm SD of compliance was (81.66% \pm 7.85%) with a range of 26.67 - 93.33 % , while *Vogts, 2011* ⁽²⁴²⁾ in a study conducted on 100 surgical cases done in a tertiary Newzealand hospital showed that the mean of compliance to Sign In period items was 56% with range of 27-100%.

In this study, as regards the compliance to “Time Out period”, The mean \pm SD of compliance was 74.94% \pm 8.74% with a range of 46.67 - 93.33 % , while *Vogts, 2011* ⁽²²⁾ in his study conducted on a tertiary Newzealand hospital surgical cases showed near results where the mean of compliance to Time Out period was 69% with range of 33 - 100% .*Stéphane Cullati et al., 2010*⁽²⁵⁾ in a study done at Geneva University Hospitals in Switzerland, the time out compliance ranged from 72-100%. *Van Schoten and Kop , 2014*⁽²⁶⁾ also in a study on 854 procedures in Operating rooms of 2 academic, 4 teaching and 12 general Dutch hospitals showed compliances to the Time Out period with a mean 71.3%.

In this study, as regards the compliance to Sign Out period, The mean \pm SD of compliance was 67.05% \pm 13.15% with a range of 25 - 75%, while Vogts, 2011⁽²⁴⁾ shows in a study conducted on 100 surgical cases in a Neuzland hospital that the compliance mean to Sign Out period was 40% that is less than compliance assessed in our study. Stéphane Cullati et al., 2010⁽²⁵⁾ in a study done at Geneva University Hospitals in Switzerland, found that the sign out compliance ranged from 19-86%.

In this study, each stage of the 4 stages of the WHO checklist shows items of low compliance as follows:

In stage I “sign in”, items of the lowest compliance were “briefing” 100% not checked, “patient confirmed his consent” 45.2% not checked, “patient allergy” 39.3% not checked and “instruments sterility” 27.9% not checked. In stage II “SSI bundle”, items of the lowest compliance were “blood glucose level control” 100% not checked, “maintenance of patient normothermia” 84.3% not checked, “O.R. doors closed unless necessary” 50.5% not done and “prophylactic antibiotics” 34.8% not checked. In stage III “time out”, items of the lowest compliance were “nurse checked patient position” 100% not checked, “surgeon checked patient procedure” 67.2% not checked, “nurse checked surgical site” 63.6% not done and “anesthetist checked surgical site” 30.5% not checked. In stage IV “sign out”, debriefing item showed low compliance (100% not checked).

Assessment of communication between health care providers revealed poor compliance as **briefing** and **debriefing** showed low compliance (100% not done). Briefings facilitate the transfer of

critical information and help create an atmosphere of shared learning and responsibility. The Joint Commission recommends use of a ‘time out’ or ‘surgical pause’ to allow the team to confirm the patient, the procedure and the site of operation before the incision⁽²⁷⁾. This is now a mandatory requirement in all operating rooms in the United States and has laid the foundation for trials of preoperative team briefings, in which additional safety checks are merged into the process. Recent studies suggest that using the time just before skin incision to review the names and roles of all team members, key checks, the operating plan, familiarity with the procedure and issues that might be encountered during the case is of significant value⁽²⁸⁾.

In this study also, assessment of health care providers compliance with the WHO safe surgery checklist revealed a highly significant difference regarding compliance ($p < 0.001$) as anesthetists showed the highest compliance with a mean 85.34% while nurses showed the lowest compliance with a mean 65.02%, surgeons showed compliance of a mean 80.36%. The fact that nurses and technicians perceived less institutional commitment to safety than did physicians may suggest that they are more likely to observe deficiencies in the organizational infrastructure related to patient safety than are physicians⁽²⁹⁾.

The current study shows that HCP (surgeons, anesthetists and nurses) with highest work load had lower compliance regarding some safety items. This agrees with a Japanese study which concluded that work load not only directly impacts the psychological well-being of the workforce, but also impacts patient care³⁰

Another study suggest that promoting a climate of safety, which includes taking into account workplace organizational factors and physical and psychological hazards, is the best way to improve the healthcare workplace and thereby patient safety.¹⁹

The limitations to this study were the narrow range of patients' age (from 19 to 27 years) because this is the type of patient the hospital deals with. In addition, this was a descriptive cross-sectional study with no follow-up information on patient outcomes.

Conclusion and recommendations:

It is concluded that health care providers working in the Operation rooms of Police hospital in Cairo show low compliance to some items of the WHO safe surgery checklist. Their awareness of the importance of compliance to the safety guidelines and its effect on the outcome of the medical care should be increased. Aspects of poor compliance should be clarified to all health care providers and a plan should be put to increase their compliance to these items. Continuous follow up and reassessment of the health care providers' commitment to the guidelines should be done periodically to assess the degree of improvement in the delivered service. Communication between health care providers should be a future goal; it can be achieved by increasing their compliance to the briefing and debriefing. Decreasing workload among HCP is important as high work load is associated with decrease in compliance with certain safety guideline items.

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Table (1): Frequency of the procedures of each score and score percent of compliance of the health care providers in Police hospital to the WHO safe surgery checklist items:

<i>Frequency of procedures don(Total Number 189)*</i>	<i>Total Score "SUM"</i>	
	<i>Score</i>	<i>Score percent</i>
1	34	85%
8	33	82.5%
24	32	80%
40	31	77.5%
38	30	75%
25	29	72.5%
21	28	70%
15	27	67.5%
6	26	65%
5	25	62.5%
1	24	60%
4	23	57.5%
1	22	55%
<i>Mean± SD of the Score</i>	29.54 ±2.24	
<i>Mean± SD of the Score percent</i>	73.85±5.60	

* 116 procedures that have not applicable items were excluded from the total score, only 189 procedures were included.

Table (2): Compliance of the health care providers in operation rooms of police hospital to stage I “sign in” and stage II “SSI bundle” of the checklist

	<i>Check List Item</i>	<i>Not Done</i>		<i>Done</i>		<i>NA</i>	
		<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Stage I “sign in” (15 items)	<i>Briefing</i>	305	100 %	0	.0%	0	.0%
	<i>Patient confirmed his</i>	138	45.2%	167	54.8%	0	.0%
	<i>Patient Allergy</i>	120	39.3%	185	60.7%	0	.0%
	<i>Instruments Sterility</i>	85	27.9%	220	72.1%	0	.0%
	<i>Anesthetic machine checked</i>	68	22.3%	237	77.7%	0	.0%
	<i>Habits of medical</i>	56	18.4%	249	81.6%	0	.0%
	<i>Patient confirmed his</i>	48	15.7%	257	84.3%	0	.0%
	<i>Anesthetic general</i>	6	2.0%	299	98.0%	0	.0%
	<i>Pulse oximeter on patient</i>	4	1.3%	301	98.7%	0	.0%
	<i>Medical history</i>	2	.7%	303	99.3%	0	.0%
	<i>Surgical history</i>	2	.7%	303	99.3%	0	.0%
	<i>Patient confirmed his ID</i>	2	.7%	303	99.3%	0	.0%
	<i>Difficult airway</i>	1	.3%	304	99.7%	0	.0%
	<i>Risk of aspiration</i>	1	.3%	304	99.7%	0	.0%
	<i>Risk of Blood Loss >500ml</i>	1	.3%	304	99.7%	0	.0%
stage II “SSI bundle” (7 items)	<i>Blood glucose level control</i>	305	100%	0	.0%	0	.0%
	<i>Maintenance of patient</i>	257	84.3%	48	15.7%	0	.0%
	<i>Operating room doors</i>	154	50.5%	151	49.5%	0	.0%
	<i>Prophylactic antibiotics</i>	106	34.8%	199	65.2%	0	.0%
	<i>Hair removal at surgical site</i>	38	12.5%	195	63.9%	72	23.6%
	<i>Appropriate skin antiseptic</i>	33	10.8%	251	82.3%	21	6.9%

*Not applicable

Table (3): Compliance of the health care providers in operation rooms of police to stage III “time out” and stage IV “sign out” of the checklist

	<i>Check List Item</i>	<i>Not Done</i>		<i>Done</i>		<i>NA</i>	
		<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Stage III “time out” (15 items)	<i>Patient Position by nurse</i>	305	100%	0	.0%	0	.0%
	<i>Patient Procedure by surgeon</i>	205	67.2%	100	32.8%	0	.0%
	<i>Surgical Site by nurse</i>	194	63.6%	22	7.2%	89	29.2%
	<i>Surgical Site by Anesthetist</i>	93	30.5%	123	40.3%	89	29.2%
	<i>Patient Name by surgeon</i>	50	16.4%	255	83.6%	0	.0%
	<i>Surgical Site by surgeon</i>	46	15.1%	170	55.7%	89	29.2%
	<i>Patient Procedure by nurse</i>	38	12.5%	267	87.5%	0	.0%
	<i>Patient Position by Anesthetist</i>	30	9.8%	275	90.2%	0	.0%
	<i>Patient Procedure by Anesthetist</i>	22	7.2%	283	92.8%	0	.0%
	<i>Patient Name by Anesthetist</i>	20	6.6%	285	93.4%	0	.0%
	<i>Patient Name by nurse</i>	14	4.6%	291	95.4%	0	.0%
	<i>Specific Equipment required by surgeon</i>	1	.3%	304	99.7%	0	.0%
	<i>Anesthetist has specific concern</i>	1	.3%	304	99.7%	0	.0%
	<i>Unexpected steps surgeon wants the team to know</i>	1	.3%	304	99.7%	0	.0%
	<i>Patient Position by surgeon</i>	0	.0%	305	100.0%	0	.0%
Stage IV “sign out” (4 items)	<i>Debriefing</i>	305	100%	0	.0%	0	.0%
	<i>Sharps count completed</i>	69	22.6%	236	77.4%	0	.0%
	<i>Instruments count completed</i>	26	8.5%	279	91.5%	0	.0%
	<i>Procedure name recorded</i>	2	.7%	303	99.3%	0	.0%

Table (4): Frequency of the operations done by each surgeon.

	<i>Health care provider Code</i>	<i>Number Of Operations</i>	<i>Percent from the Total Sample</i>
<i>Surgeon</i>	1	24	7.9%
	2	18	5.9%
	3	30	9.8%
	4	18	5.9%
	5	12	3.9%
	6	21	6.9%
	7	9	3.0%
	8	69	22.6%
	9	68	22.3%
	10	36	11.8%
	Total	305	100%
<i>Anesthesiologist</i>	1	113	37.0%
	2	87	28.5%
	3	105	34.4%
	Total	305	100%
<i>Nurses</i>	1	63	20.7 %
	2	42	13.8 %
	3	42	13.8 %
	4	42	13.8 %
	5	33	10.8 %
	6	42	13.8 %
	7	41	13.4 %
	Total	305	100%

Table (5): Percentage of sharps count completion by different nurses in surgical operations

Nurse code		No 1	No 2	No 3	No 4	No 5	No 6	No 7	P *
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
<i>Sharps Count</i>	<i>Not Checked</i>	42 (66.7%)	2 (4.8%)	3 (7.1%)	6 (14.3%)	1 (3.0%)	12 (28.6%)	3 (7.3%)	<0.001
	<i>Checked</i>	21 (33.3%)	40 (95.2%)	39 (92.9%)	36 (85.7%)	32 (97.0%)	30 (71.4%)	38 (92.7%)	

*Highly significant by Fisher exact test

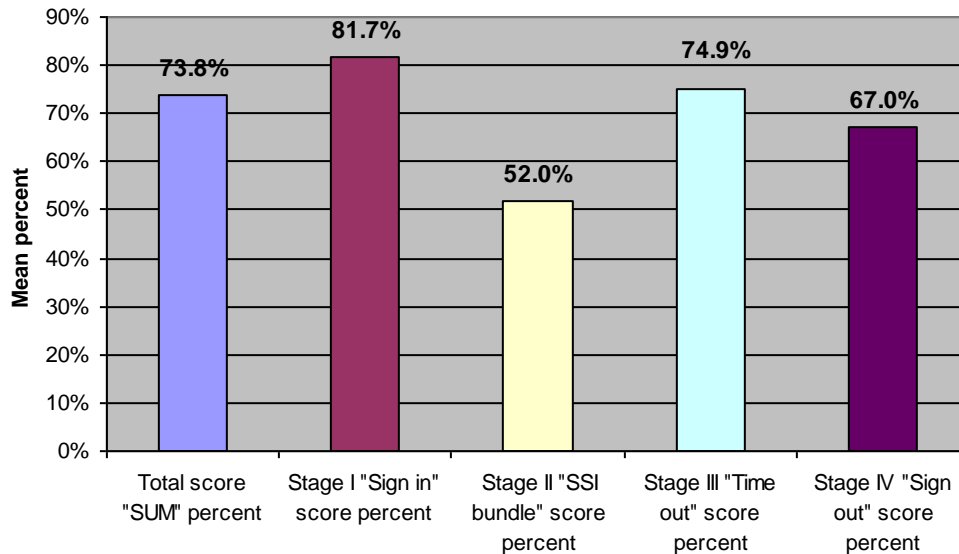


Figure (1): The mean percentage of the total score and score of each stage of the WHO safe surgery checklist.

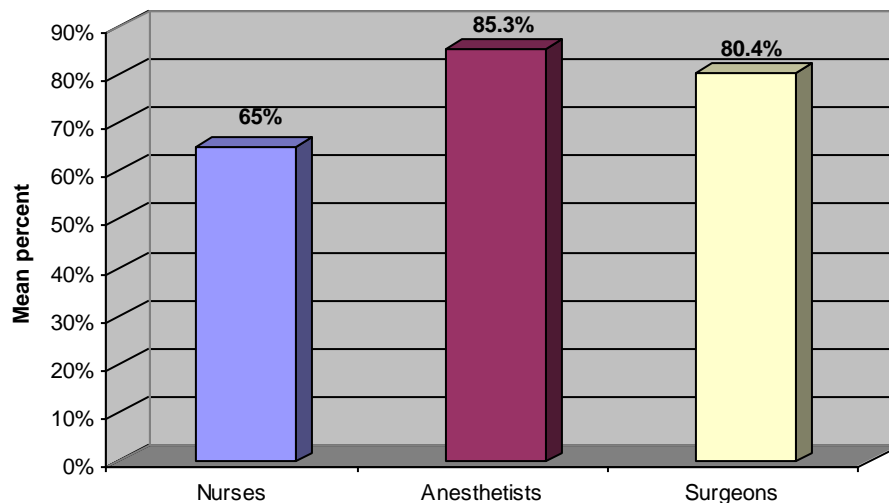


Figure (2): The mean percentage compliance of the health care providers working in police hospital's operation rooms with the WHO safe surgery checklist.