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Research Article

Implementation of Surgical Safety Checklist in Mukalla Hospitals; Yemen

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Abstract

Background: The use of WHO surgical safety checklist results in striking improvements in surgical outcomes and decreases effectively the adverse events; accordingly, it necessitates rapid adoption worldwide. We are going to assess the extent of application of such checklist in our surgical setting.

Method: We surveyed all six hospitals in Mukalla city in three months period (Aug-Oct 2016), Observations and interviews were conducted using already prepared forms. The data was analyzed by SPSS version 20.

Results: Six hospitals performed 110 procedures during the three months period. The private hospitals implementing the WHO surgical safety checklist more than government hospitals 87.10% vs 79.39%. (Sign out) part of the checklist was the most applied 86.75% followed by (sign in) and (Time out) 86.37%, 81.08% respectively. The overall application of the standards of the checklist in Mukalla hospitals was 81.77%.

Conclusion: The surgical safety checklist of WHO was partial applied in our hospitals. The checklist is a simple tool, which can downloaded freely from the WHO. Adaptation of the checklist to suit local conditions is encouraged.

Keywords: Surgical Safety Checklist; Mukalla Hospitals

Abbreviations

WHO: World Health Organization; SSC: Surgical Safety Checklist; DALY: Disability-Adjusted Life Year

Introduction

Implementation of the surgical safety checklist was associated with reductions in the rates of death and complications among patients who were undergoing surgery in a diverse group of hospitals. Overall, surgical complications fell from 11% to 7%, and mortality fell from 1.5% to 0.8% [1].

World Health Organization (WHO) published guidelines identifying multiple recommended practices to ensure the safety of surgical patients worldwide [2]. Safe Surgery Saves Lives initiative was established in 2009 by the World Alliance for Patient Safety as WHO implementation manual surgical safety checklist [3].

The World health organization report 2002 estimated 164 million disability-adjusted life year (DALY), representing 11% of the entire disease burden, all were attributable to surgically treatable conditions [4].

The incidence of perioperative deaths due to anesthesia is 2.57% according to Maman., et al. 93% are avoidable [5]. Efforts to implement practices designed to reduce surgical- site infections or anesthesia-related mishaps had been shown to reduce complications significantly [6].

A growing body of evidence links teamwork behaviors to improved outcomes, with high-functioning teams achieving significantly reduced rates of adverse events [7,8]. Lingard and others prove that structured team briefing reduces the communication failure in the operation room [9]. Orthopedic surgery is highly de-

manding area for applying surgical safety checklist due to its technical complexity [10].

The National Surgical Quality Improvement program application in the private sector had reduced the thirty-day morbidity significantly [11].

Weiser., *et al.* reported on the use of checklists in emergency surgery, They found that use of WHO surgical safety checklists is feasible and should be considered in urgent operations, it can reduce the complications by more than one third from 18.4% to 11.7% and reducing death from 3.7% to 1.4% [12].

Checklists are particularly applicable to the operating room setting, where they had been used successfully around the world, although without clear standards or guidance as to their content. 'Checklist fatigue' can result from the use of multiple checklists, which can actually lead to errors if they are seen as extraneous and unimportant [13]. During hospital admission, one out of ten patients experienced adverse events, most of them are preventable [14]. Almost 2.5 million admissions per year in Canada, 185000 are associated with adverse events and nearly 70000 of them are preventable [15]. In Western Australia, their audit of surgical mortality had helped them to change surgical practice [16].

Materials and Methods

Cross-sectional observational study involving the government and private hospitals in Mukalla city (Yemen), was conducted during the period august to October 2016, 110 members of the operation theatre staff had been interviewed including surgeons, assistants, technicians, nurses of ICU and patients (70 females, 40 males) were interviewed and the questioner were filled by the observer. The questionnaire including the ID of the responder then the steps before anesthesia then steps before incision then before leaving the theatre, all data was written according to surgical safety standards given by WHO and analyzed by means of SPSS.

Results and Discussion

Sixty three percent of the respondents are female and 33% of them holding diploma in their specialty while 17% graduated from university, 56% of respondents are working in the private hospitals. Almost all operations (99%) in which the checklist applied were major operations and 83% of them were routine, 60% of the operations were checked before surgery.

In the first steps of surgery that was included in the WHO checklist, it looks that all respondents proved checking the name and acceptance of the surgery is applied routinely, while the marking of the site of surgery is applied in 34.5% only. The total percentage of (Sign in) procedures is (86.37%).

Variables		Frequency (n = 110)	%	Mean	Std. Deviation	P value
Gender	Male	40	36.4	1.64	0.483	.006
	Female	70	63.6			
Education level	primary	24	21.8	2.46	1.020	.086
	Secondary	30	27.3			
	Diploma	37	33.6			
	University	19	17.3			
Hospital	Government	48	43.6	1.56	0.498	.215
	Private	62	56.4			
Type of surgery	Major	109	99.1	1.01	0.095	.000
	Minor	1	0.9			
Surgery operation	Emergency	18	16.4	1.84	0.372	.000
	Routine	92	83.6			
Check before surgery	Yes	44	40.0	1.60	0.492	.045
	No	66	60.0			

Table 1: Distribution of general criteria, hospital setting and surgical operations.

In our hospitals, they are taking care about the cotton counting and sterilization before incision 99% but they are less aware about bringing x-ray of the patients into the theatre 59%. The total percentage of (time out) procedures (81.08%).

The last part of the checklist (sign out), the main step which had been followed by our staff is checking complete equipment (99.1%) followed by checking the name of the operation and lastly labeling any samples. the total percentage of (sign out) procedures is (86.75%).

The private hospitals are better than governmental hospitals in applying the standards of the WHO surgical safety checklist; they applied 87.10% in compare to 79.39% in the governmental hospitals. The most neglected step in the private hospitals is marking the site of operation (33.9%) while the most neglected step in the governmental hospitals` is bringing x-ray pictures to the theatre (25%).

Checklist procedures	**n (%)**	**Hospital**		**P value**
		Private (%)	**Government (%)**	
Sign in before induction of anesthesia procedures				
Check patient name, acceptances				
Yes	110 (100)	100	100	.000
No	0	0	0	
Mark at the site of surgery				
Yes	38 (34.50)	33.9	35.4	.002
No	72 (65.50)	66.1	64.6	
Check Anesthesia medication and machine				
Yes	110 (100)	100	100	.000
No	0	0	0	
Check Pulse oxymeter				
Yes	109 (99.1)	100	97.9	.000
No	1 (0.9)	0	2.1	
Check allergic reaction				
Yes	103 (93.6)	95.2	91.7	.000
No	7 (6.7)	4.8	8.3	
Check problems in respiratory system				
Yes	100 (90.9)	95.2	85.4	.000
No	10 (9.1)	4.8	14.6	
Blood loss precaution				
Yes	95 (86.4)	93.5	77.1	.000
No	15 (13.6)	6.5	22.9	
Time out before skin incision procedures				
Introduce team by name and role				
Yes	80 (72.7)	51.6	100	.000
No	30 (27.3)	48.4	0	
Check again patient name				
Yes	101 (91.8)	93.5	89.6	.000
No	9 (8.2)	6.5	10.4	
Antibiotic taken before surgery				
Yes	91 (82.7)	93.5	68.6	.000
No	19 (17.3)	6.5	31.4	

Cotton count and sterilization				
Yes	109 (99.1)	98.4	100	.000
No	1 (0.9)	1.6	0	
X-Rays pictures				
Yes	65 (59.1)	85.5	25.0	.070
No	45 (40.9)	14.5	75.0	
Sign out before the patient leave procedures				
Nurse check name of operation				
Yes	10 (98.2)	96.8	100	.000
No	2 (1.8)	3.2	0	
Nurse check complete equipment				
Yes	109 (99.1)	100	97.9	.000
No	1 (0.9)	0	2.1	
Nurse label samples				
Yes	69 (62.7)	100	100	.010
No	41 (37.3)	0	0	
Nurse check for mechanical problems				
Yes	91 (87.3)	74.2	93.8	.000
No	19 (12.7)	25.8	6.2	

Table 2: Surgical checklist procedures by type of hospital.

Discussion

The use of WHO surgical safety checklist (SSC) is variable among countries. In general and according to Vohra study, there are 57.5% of medical professional from 69 countries used the WHO SSC preoperatively. Most of them from high-income countries in comparison to other countries 83.5% vs. 43.5% P = 0.001, most of their respondents were females, consultant surgeons and working in university hospitals The highest numbers of respondents by country were from Egypt (10.8%), followed by India 9.2%, Pakistan 3.9%, Bangladesh 2.5% and the UK 1.8% [17]. In our hospitals, we are using The WHO SSC, although not complete, in around 84% of surgical setting.

It has been estimated that wrong-site and wrong-patient surgery occurs in about one in 50,000 - 100,000 procedures in the United States, equivalent to 1500 - 2500 incidents each year An analysis of 126 cases of wrong-site or wrong-patient surgery in 2005 revealed that 76% were performed on the wrong site, 13% on the wrong patient and 11% involved the wrong procedure

Wrong-site surgery, although rare, mandates strict rules to implement the marking of the site of operation [18]. Prevention of wrong side/site, procedure and adverse events needs new technologies, case reports and applications of safety programs [19]. Unfortunately, this is the major missed step in our situation P = 0.002 Canadian Orthopedic Association recommend the Sign Your Site protocol, which is marking the site of operation in order to eliminate the wrong-site surgery [20].

Although the checklist is an important tool in reducing errors in many disciplines and improving the outcome, the integration of such checklist into medical and intensive care practice has not been as rapid and widespread as with other fields [13], our situation is an example may be due to factors such as crowding, low qualified medical personnel, lack of strict health system, low level management, less team work practice and deficient health profession collaboration.

Conclusion

Implementation of WHO surgical safety checklist is important to reduce the mortality and complications in the surgical setting. Although our country is classify as a low-income country, we have an acceptable practice of the items of the checklist more in the private hospitals than in the governmental hospitals. All our health services are in need for strict rules to imply such checklist.

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Conflict of interest

The authors declare no conflict interests.

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