

Improving Occurrence Variance Reporting System through Implementing an Educational Program for Staff at King Saud Hospital, Unaizah, Al –Qassim, KSA.

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Abstract

Occurrence variance reporting (OVR) is very essential for ensuring patient and staff safety, quality of care and risk management. Variance is any event or circumstance not consistent with the standard routine operations of the hospital and its staff or the routine care of a patient/visitor. The aim of the study was to improve Occurrence Variance Reporting System at King Saud Hospital, Unaizah, Al Qassim. Design: A quasi experimental research design. Setting: King Saud Hospital, Unaizah, Al –Qassim, KSA. Sample: all occurrence variance reported during 6 months in each of pre test, post test, follow up1 test, and follow up2. Data Collection Tool: OVR trending and analysis. Result: occurrence variance reporting system significantly improved after implementation of an educational program on OVR to hospital staff and administrators than before. Recommendations: Continues monthly and quarterly monitoring and gathering of data to maintain the performance, Continuous education, Rewards and commendations are given for the highest reporting department.

Keywords: incident- report- occurrence variance.

1. Introduction:

Occurrence reports are used to report events that may have quality or risk management considerations and may require further follow up from other departments (Stanford Hospital and Clinics, 2008). Occurrence variance report is also called incident report in literature. It is a core organizational tool for ongoing risk identification. The purpose of incident report is to provide complete facts about an incident or adverse event. A successful incident reporting system is one in which 100% of the outcomes of incidents and adverse events are reported to the risk manager (Huber, 2010).

Incident reporting captures more contextual information about incidents and, when actively promoted within the clinical setting, it can detect more preventable adverse events than medical record review (Evans et al., 2006).

According to Washington State Department of Health (2014) adverse events are medical errors that could and should be avoided by health care facilities. These errors called Serious Reportable Events and may result in patient death or serious disability. Most common causes of adverse events include: failures in communication during handoffs, unclear communication in critical situations, lack of protocols, lack of knowledge of products or unavailability of equipment, and ineffective education.

Sentinel event is unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof, not related to the natural course of a patient's illness or underlying condition (Comprehensive Accreditation Manual for Hospitals, 2013).

Near misses are defined as events, situations, or incidents that could have caused adverse consequences and harmed a patient, but did not. Factors involved in near misses have the potential to be factors (e.g., root causes) involved in errors if changes are not made to disrupt or even remove their potential for producing errors (Hughes, 2008).

Steps to identify, report, and follow up an adverse event include identifying an adverse event, report the adverse event, explore the cause of the event through root cause analysis, and use the result of the analysis to make improvement (Washington State Department of Health, 2014).

Incident reports comprise two aspects. First, there is the actual reporting of any particular incident (this may be something affecting you, your patient or other staff members), and the relevant corrective action taken. Secondly, information from incident reports is analysed to identify overall improvements in the workplace or service. You should be familiar with, and follow, incident reporting procedures in your workplace. The following tips are provided to help this process. Information included in an incident report are: The name of the person(s) affected and the names of any witnesses to an incident; Where and when the incident occurred; The events surrounding the incident; Whether an injury occurred as a direct result of the incident; The response and corrective measures that were taken. It should be signed and dated prior to handing it in to the appropriate person, such as a supervisor (Nurse Ausmed, 2014).

A good incident report will effectively collect information that can be used by risk management, quality assurance and patient safety committees to harvest important data. To help ensure staff completes the report in a

timely manner, the report should be concise, easy to use and practical. A checklist format with a narrative section is used most often. Essentially, the incident report should be like a good news story - who, what, when, where and why should be answered for the reader. Witnesses, contributing factors and any relevant clinical information should be included. The incident report is generally considered to be an administrative record of the facility, not part of the legal medical record. The incident report should contain factual, objective, descriptive documentation relative to the patient's condition and response to the incident (Martin, 2008).

1.1 Significance of the study:

The Occurrence Variance Reporting System of King Saud Hospital is to provide a systematic, standardized Hospital Wide mechanism in identifying, developing, prevention and improvement which have direct or indirect effect on patient care. It is used as mechanism for monitoring quality improvement in a non-punitive approach .The OVR System from the past years in King Saud Hospital had not been very effective as it only reached a low response rate among the whole population of the organization. This resulted to under reporting and undocumented events in the hospital. Staff awareness on Occurrence Variance reporting system has not reached to 50% of the total employee of the hospital evidenced by low rate of OVR reports received. this study is conducted to Improve Occurrence Variance Reporting System at King Saud Hospital, Al –Qassim

1.2. Aim of the study:

To Improve Occurrence Variance Reporting System at King Saud Hospital, Al –Qassim. This aim can be achieved through the following objectives:

1. Assess Occurrence Variance Reporting System before starting the program.
2. Design educational program for all hospital staff on OVR reporting system based on the assessment.
3. Implement the designed program.
4. Evaluate the effect of the program on OVR reporting system.

1.3. Research question:

Is there an improvement in the OVR System after implementing an educational program for staff at King Saud Hospital Unaizah, AlQassim, KSA?

2. Subjects and Method

2.1. Research design:

A quasi experimental research design with pre test, post test, follow up1 test and follow-up2 assessments were used in carrying out the study. In quasi experiments there is manipulation of a variable like true experiments but it lacks randomization and control group. Quasi experiments are studies that aim to evaluate interventions but that do not use randomization. Quasi experimental design aims to find the effect of an intervention on the variable understudy. Quasi-experimental study designs, sometimes called nonrandomized, pre-post-intervention study designs (Harris et al., 2014).

Quasi- experimental designs are useful in testing the effectiveness of an intervention and are considered closer to natural settings (Sousa, Driessnack & Mendes,2007). In the present study OVR reporting system was assessed in the pre test and causes of underreporting was analyzed. then educational program for hospital staff was designed and implemented to increase the awareness of staff with OVR reporting system, then OVR reporting system was assessed three times- post test, follow up 1 and follow up 2- the durations of assessment were 6 months each, to evaluate improvements.

2.2. Setting:

The study was conducted at King Saud Hospital Unaizah, AlQassim, KSA. It is the only tertiary care hospital in the Governorate. This hospital has 360 beds and provides service to the community through the following units and departments: ICU, CCU, NICU, pediatric ICU, burn unit, OR, dialysis, Surgical, medical, emergency, and obstetric departments.

2.3. Sample:

All occurrence variance reported to quality and clinical risk management department during 6 months in each phase of the study.

2.4. Tool for data collection:

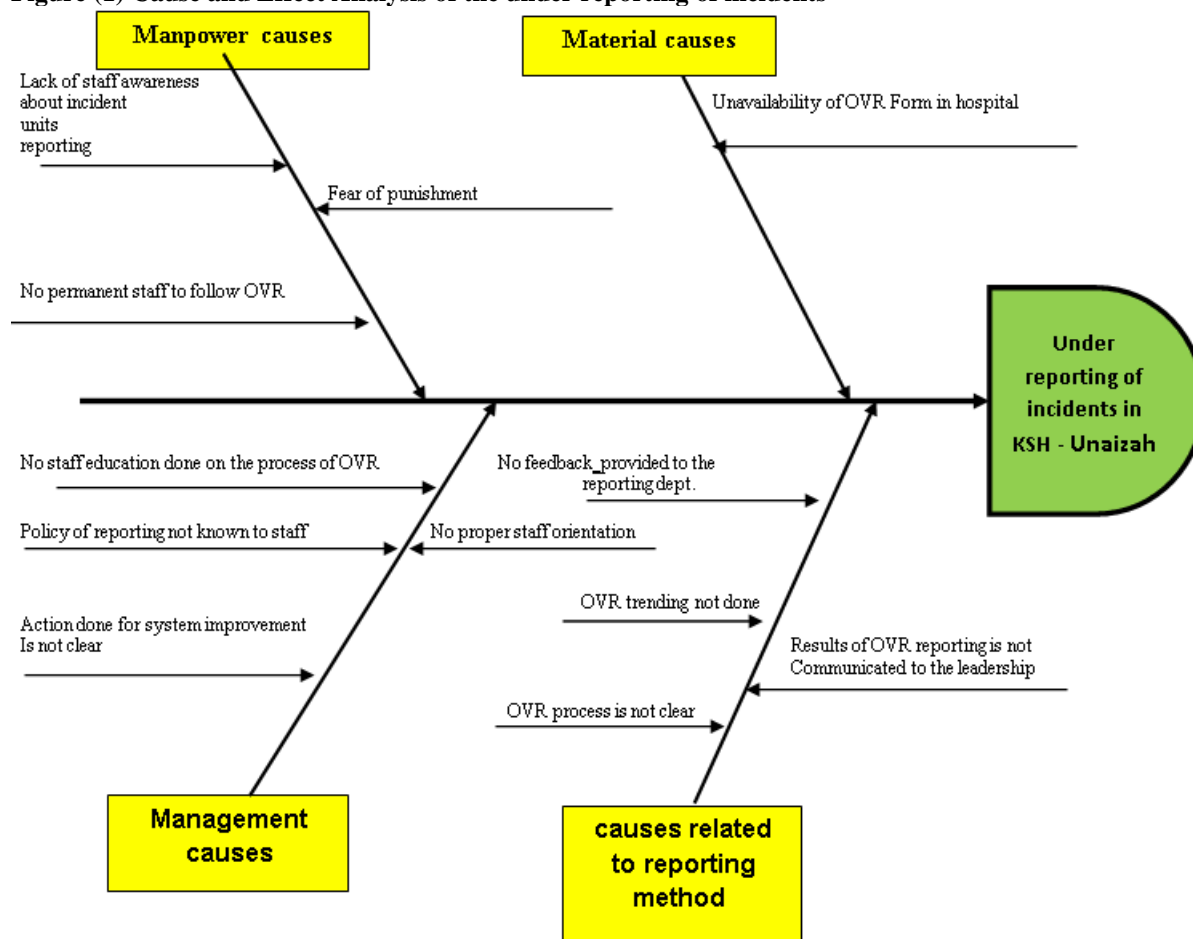
OVR Trend and Analysis: Trend analysis is the ongoing review of data to detect legally or medically significant patterns (Ricard, 1995). OVR forms trended monthly. Retrospective analysis of all OVRs submitted to quality and clinical risk management department because any incident happen in any hospital department, regardless whether the incident resulted in sentinel event or not, is normally submitted to quality and clinical risk management department. The analysis includes numbers of reported OVRs, type of incident and the reporting department.

2.5. Field work:

This study took 3.5 years from 1st of Muharram 1432 H until the end of Jumada2 1435 H. The study was conducted throughout the following phases:

Phase I (assessment): this phase lasted 6 months before starting the educational program. It started from 1/1/1432H until 30/5/1432H. During this phase pretest is conducted to assess the existing state of OVR reporting system, through monthly trending form of all OVRs submitted to quality and clinical risk management department. Also, causes of underreporting of incidents were assessed through cause and effect analysis as described in the figure (1):

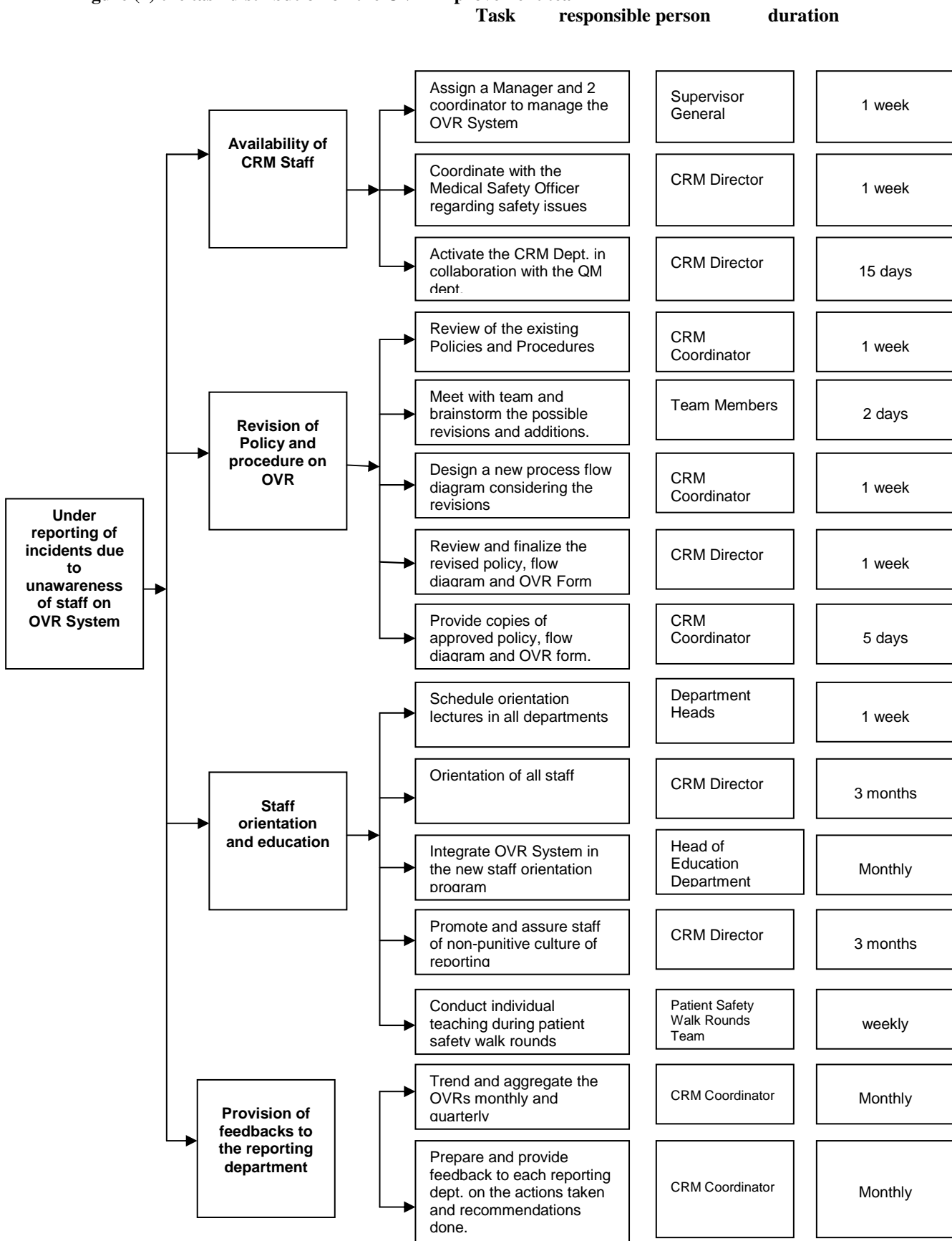
Figure (1) Cause and Effect Analysis of the under reporting of incidents



Phase II (planning): this phase took 2 months from 1/06/1432 H to 8/ 8/ 1432H. During this phase:

- 1- An improvement team is formed. The improvement team is a cross functional team whose members were selected according to their role in the promotion of staff awareness on the OVR reporting system. The improvement team is responsible for the analysis of the problem of OVR under reporting and generating possible solutions for improving the system of OVR. The team is formed according to each member's duties and responsibilities and consists of: quality and clinical risk management director (team leader), medical safety officer, quality and clinical risk management coordinator, nursing quality management coordinator, head of education and training department, infection control nurse practitioner, and a nurse educator. Tasks assigned to team members are described in figure (2).
- 2- The existing policies and procedures, flow chart and OVR form were reviewed
- 3- OVR educational plan was established.
- 4- Lectures prepared and scheduled.

Figure (2) the task distribution on the OVR improvement team



Phase III (implementation): This phase took 4.5 months from 16/08/1432 H to 29/12/1432 H. During this phase routine meetings were conducted on every Monday at 9:00 AM followed by a Risk Management and Patient Safety Walk Rounds in designated units/departments according to the prepared schedule prior to the meeting.

Agendas were produced ahead of time and assignments were conducted between meetings. All meetings were held in the Clinical Risk Management Director's Office. Quorum of the meeting was the presence of 50% of the members.

The improvement team attended the quality Improvement Project Workshops conducted in the hospital to have knowledge on Quality Improvement Concepts and process to help them to be ready for the performance improvement activities and data measurement and analysis. Also, during this phase staff, head nurses, supervisors, directors of services and heads of departments' orientations were conducted. The detailed time plan for OVR system improvement project is displayed in table (1).

Table (1) Time plan for OVR improvement project implementation

Time	Activity
1/1/1432 – 30/5/1432 H	Assessment phase: pre test: Monitoring the number of OVR before starting the project
1/06/1432 - 8/8/1432	Planning phase: 1- Assignment of CRM (clinical risk management) Staff 2- Activation of CRM Department. 3- Formulation of CRM Plan 4- Review and Revision of existing Policies and Procedures, Flow Chart and OVR Form 5- Draft OVR Educational Plan 6- Establish OVR Educational Plan 7- Design and schedule lectures
16/08/1432 - 29/12/1432H	implementation phase: 8- Implementing the educational program and staff orientation per department 9- Patient safety walk rounds were conducted.
1/01/1433 - 30/06/1433 H	Evaluation of improvement phase: 10- Post test: Monitoring the Improvement in OVR System immediately after program implementation. 11- Follow up 1: Monitoring the Improvement in OVR System one year after program implementation. 12- Follow up2: Monitoring the Improvement in OVR System two years after program implementation.
1/01/1434 - 30/06/1434 H	
1/1/ 1435 -30/ 6/ 1435 H	

Phase IV (evaluation of improvement): through which the improvement in the OVR system was monitored. This evaluation was done on 3 phases:

- 1- **Post test:** In the first 6 months immediately after the education OVR trending and analysis were done in the period from 1/01/1433H to 30/06/1433H.
- 2- **Follow up1:** OVR trending and analysis were done one year after implementation of the program in the period from 1/01/1434H to 30/06/1434H.
- 3- **Follow up2:** for continuous monitoring of the OVR reporting system, OVR trending and analysis were done two years after the educational program from 1/1/1435 H-30/6/1435H to monitor the retention.

2.6. Statistical Analysis:

OVRs were trended monthly; data were entered into SPSS program version 20 and analyzed for number and type of incidents and the reporting department. Paired sample t-test was used to test the statistical significant difference between pre test –post test, pre test – follow up 1, and pre test- follow up 2. One way ANOVA is used to compare the OVR reporting system throughout all phases of the program.

3. Results:

Figure (3) Frequency of OVR Reporting Data in pre test.

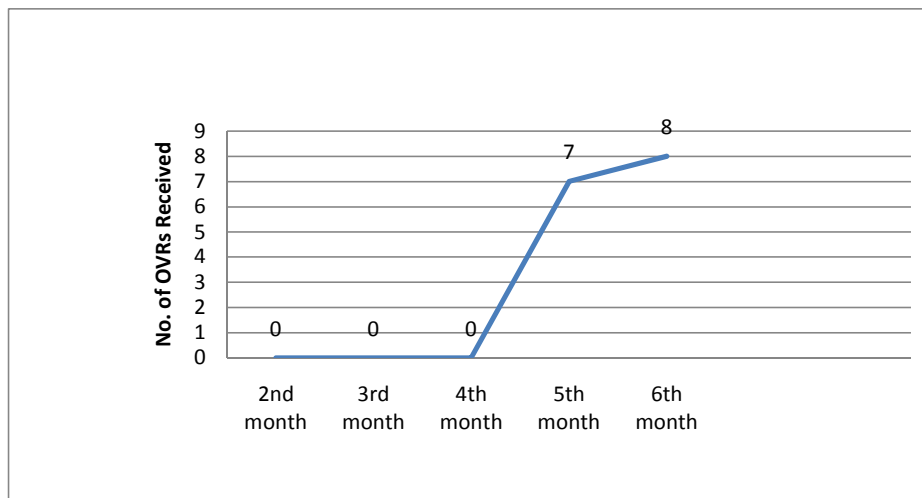


Figure (3) shows frequency of OVR reporting data in the pre test. According to the figure there was no OVR data reported during majority of months in the pretest. Only 15 reports were reported during the 6 months of data collection.

Figure (4) Frequency of OVR Data Reported in the post test.

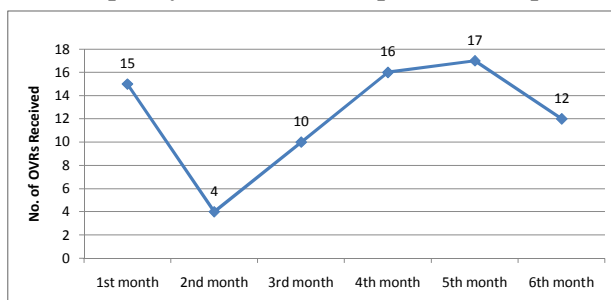


Figure (4) presents number of OVRs reported in the post test. According to the figure the highest number of OVR had been reported in 5th month (N= 17). However the lowest number was in 2nd (N = 4).

Figure (5) Frequency of incidents Reported during post test per category

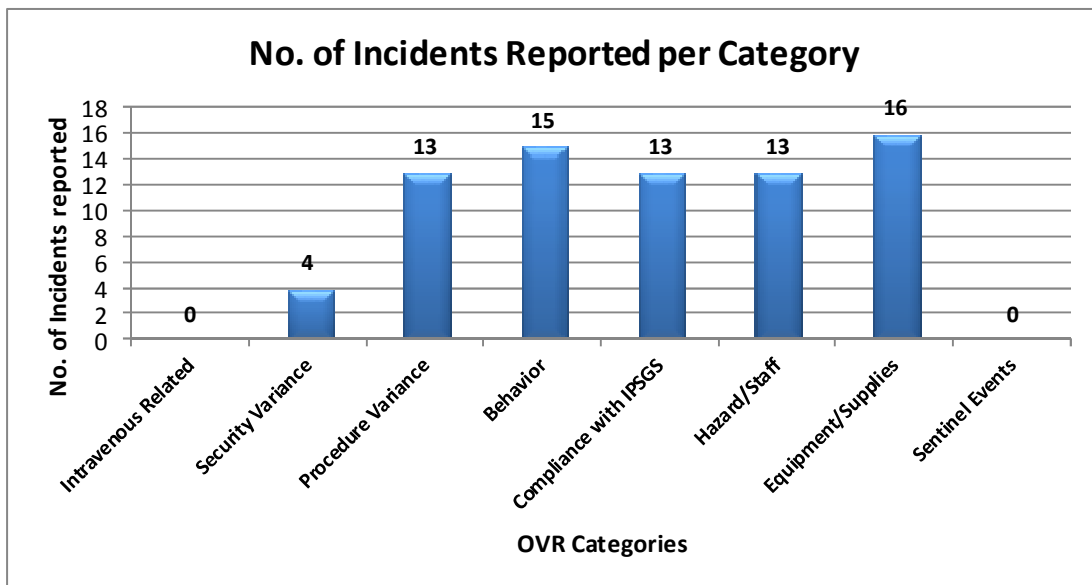


Figure (5) presents number and category of incidents reported in the post test. According to the figure the highest number of incidents had been reported were related to equipment and supplies (N= 16). However the no incidents were reported in relation to both intravenous and sentinel events (N = 0).

Figure (6) Number of OVRs received in the follow up 1

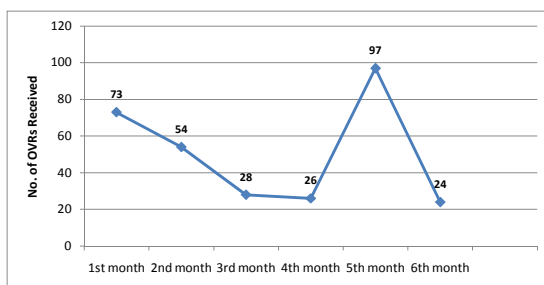
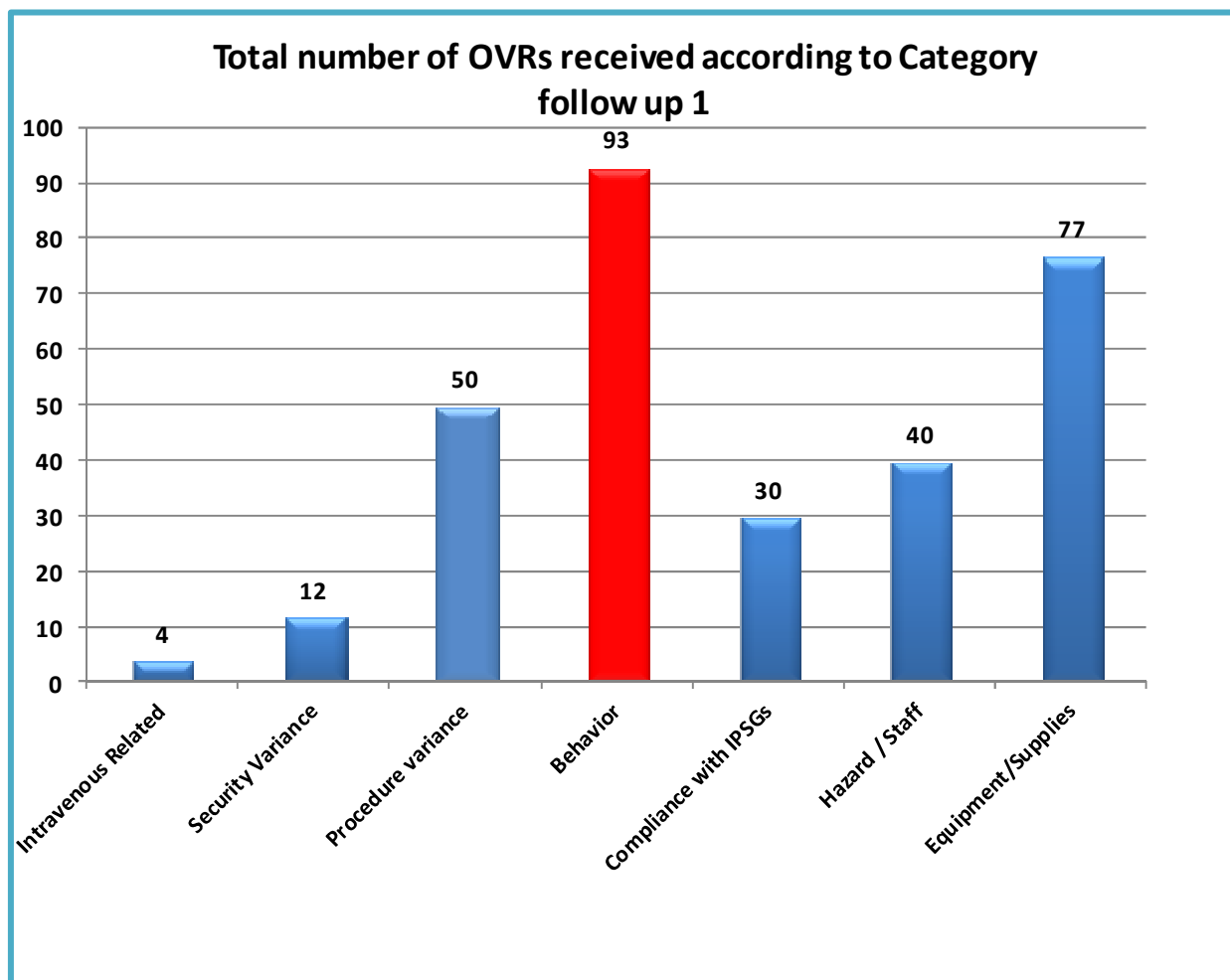


Figure (6) presents number of incidents received during the 6 months of follow up 1 evaluation. According to the figure the highest number of incidents had been reported during 5th month (N= 97). However the lowest number was in 4th month (N = 26).

Figure (7) Frequency of incidents Reported in follow up 1 per category.



According to figure (7) majority of incidents in follow up 1 were related to behavior (n=93). The lowest number of incidents were related to intravenous (n= 4)

Figure (8) Number of OVRs Received monthly In the Follow UP 2 .

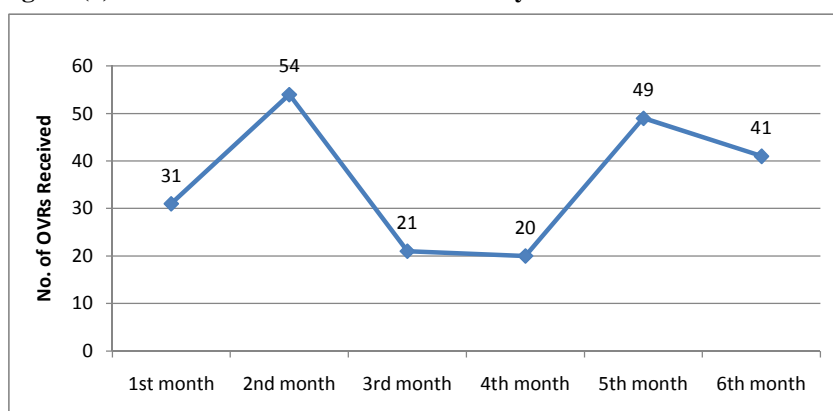
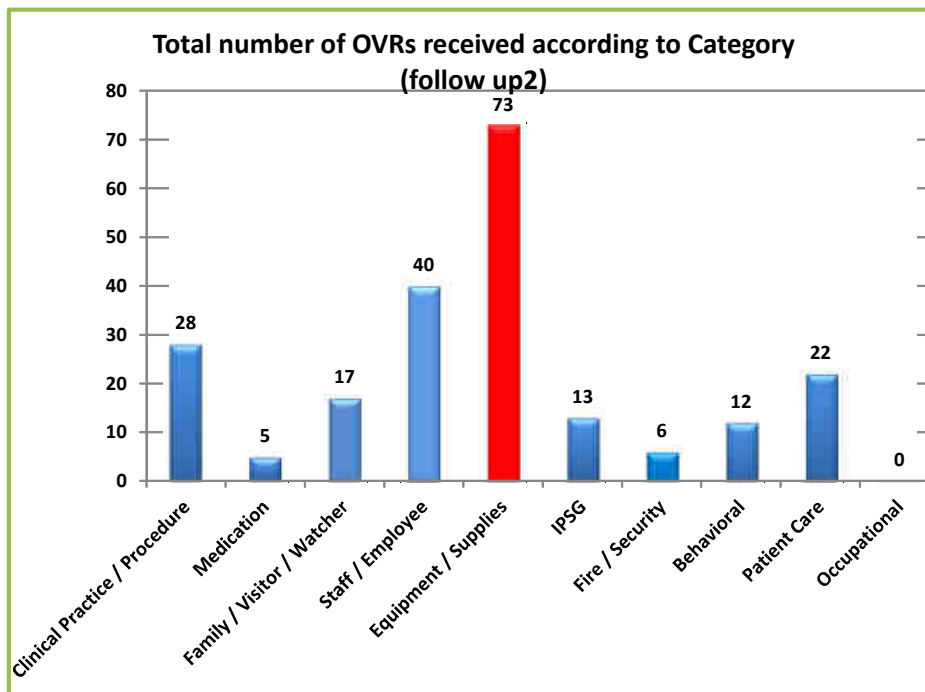


Figure (8) shows number of OVR received in the follow up2. According to the figure the highest number of OVR was received in 2nd month (n=56). While the smallest number received during follow up was in 4th month (n=20).

Figure (9) Number of OVRs reported In the Follow UP 2 according to category of incidents



According to figure (9) the majority of incidents in the follow up 2 were related to equipments and supplies (n = 73 incidents). However, no occupational incidents were reported in the follow up 2.

Table (2) No. of OVRs reported by hospital departments throughout project phases

Hospital department	No. of incidents reported				Total
	Pretest	Posttest	Follow up 1	Follow up 2	
1. Nursing	1	42	188	158	389
2. Quality and risk management	12	0	21	3	36
3. Medical services	0	2	4	8	14
4. Information service	0	0	0	0	0
5. Maintenance	0	0	0	1	1
6. Infection control	0	17	56	33	106
7. Social service	0	0	0	0	0
8. Pharmacy	0	0	0	0	0
9. Laboratory	2	7	16	7	32
10. radiology	0	0	1	0	1
11. medical record	0	0	16	3	19
12. diabetic	0	0	0	0	0
13. security	0	0	0	0	0
14. CSSD	0	0	2	0	2
15. Housekeeping	0	0	0	0	0
16. Dental	0	0	0	1	1
17. Rehabilitation	0	1	0	0	1
18. Physiotherapy	0	0	0	0	0
19. Transportation	0	0	0	0	0
20. Dietary	0	0	0	2	2
21. waste management	0	0	0	0	0
22. medical supplies	0	0	0	0	0
23. administration	0	5	1	0	6
24. respiratory therapy	0	0	0	0	0
25. admission office	0	0	1	0	1
Total	15	74	306	216	611

Table 2 displays number of OVRs reported by hospital departments throughout project phases. According to the table the highest number of OVRs were reported in the late post test (n =306 OVR) while the lowest number was in the pretest (n= 15 OVR). Concerning hospital departments the highest number of OVRs were reported from nursing department (n = 389 OVR). However no OVR was reported from information service, pharmacy, social service, diabetic security, housekeeping, physiotherapy, transportation, waste management, medical supplies and respiratory therapy. The total number of OVRs received throughout all phases of the project was 611 OVRs.

Table (3). Comparison between OVRs reporting systems between pretest and other phases of the study.

t-test	Pre-post test	Pre-follow up 1	Pre-follow up 2
T	-4.7	-3.9	-6.3
P	.005*	.01*	.001*

*significant at significant level < .05

According to table (3) there were significant improvements in the OVR reporting system in the post test, follow up1 and follow up2 than in the pre test.

Table (4). Comparison between OVRs reporting systems throughout all phases of the study.

Time	Phases of the study				F	P-value
	Pre test	Post test	Follow up1	Follow up2		
1 st month	0	15	73	31	16.9	.001**
2 nd month	0	4	54	54		
3 rd month	0	10	28	21		
4 th month	0	16	26	20		
5 th month	7	17	97	49		
6 th month	8	12	24	41		
Total	15	74	306	216		

**statistically significant at p<.005

According to table 4 there were statistically significant difference between all phases of the study regarding OVR reporting system.

4. Discussion:

It is important that management and staff in all departments cooperate to achieve safe, high quality services to patients, where preventable incidents can be reduced to a minimum (King Khalid University Hospital, 2012).

"An occurrence/incident is any unusual or unexpected, recognized, suspected, or potential event or condition that is not consistent with the routine safe delivery of patient care or operations of hospital". Such unusual events may include: personnel injuries, damages to or loss of personal/hospital property, Variations from established policies and procedures, unexpected clinical complication and safety hazard (Jordanian Royal Medical Services, 2008).

The aim of the study was to improve Occurrence Variance Reporting System at King Saud Hospital, Unaiza, Al Qassim, KSA. The results of the study (figure.3) revealed that no OVRs were reported during majority of months in the pre test the total number of OVRs that have been reported during pre test was 15 OVRs this refers to: no permanent staff to follow the OVR system, lack of staff awareness and readiness about incident reporting, no staff education done on the process of OVR, no proper staff orientation, policy not known to staff, unavailability of OVR form in the units, fear of punishment, no feedbacks given to the reporting department and lack of managerial support. This result is congruent with King Khalid University Hospital (2012) who mentioned that during 2012 there was evidence of under-reporting as compared to hospitals of similar size.

The results of the study tables (2&3) revealed that there were significant improvements in the occurrence variance reporting system in the post test, follow up1, and follow up2 than in the pre test. These improvements could be due to the effect of the educational program which increased the awareness of hospital staff and administrators with OVR system, and its importance to the hospital, staff and patient safety. Also, the policies were revised and communicated, the stabilization of non punitive culture. This result is in the same line with Eldeeb (2010) who have mentioned that improvement had been occurred after the implementation of educational program compared to before implementation.

Moreover, the table (2) shows that the results of the follow up1 were the highest among all results this can be referred to that hospital staff become encouraged to report incidents because of being not punished when report occurrences in the period of post test. Furthermore, in the follow up2 the number of reported occurrences decreased than in the late post test this in the same line with Wassef (1998) who reported similar findings, and has interpreted it by the fact that some of the theoretical knowledge which was not utilized in regular practice is expected to be lost with the passage of time. Despite this decline the results of the follow up2 still significantly higher than pre test.

5. Conclusion:

Based on the results of the study occurrence variance reporting system is significantly improved after implementation of the educational program than before.

6. Recommendations:

1. Continues Monthly and quarterly monitoring and gathering of data to maintain the performance and ensure that the initial result is not lost through complacency and failure to comply on the implemented changes.
2. Continuous education is done through meetings, lectures and patient safety walk rounds.
3. Rewards and commendations are given for the highest reporting department.
4. Formulate and establish a flow chart of the ideal process.
5. Distribute the ideal flow chart after the approval from the team members.

List of abbreviation:

OVR: occurrence variance report.
IPSGs: international patient safety goals.

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