

Effect Of Safety Measures Instructional Guidelines on Nurses Compliance at Labor Room

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Abstract

The present study aimed to investigate nurses' compliance to safety measures at labor room. **Research hypothesis:** Utilization of instructional guideline for safety measures will enhance a positive impact on nurse's knowledge and practices at labor room. **Subjects and methods:** A *quasi experimental* study design was used and conducted at labor room in Ain shams Maternity University Hospital. **Convenient sample** was used to recruit 45 nurses with different ages, qualifications and experiences) during the morning shift. **Three tools** were used for data collection. **First tool** A Structured interview questionnaire sheet. **Part (1)**, assessed the demographic characteristics of study sample, **part (2,)** assessment of knowledge regarding safety measures compliance and nursing care for labor and **part (3)** barriers in application of safety measures at labor room. **Second tool:** An observational checklist to assess nurses practices both safety measures compliance and nursing care in labor. **Third tools:** Likert scale to assess nurses' satisfaction regarding utilization of the instructional guidelines. **Results:** revealed highly significant differences between the pre and post knowledge level and nursing practices also there were significant correlation between socio demographics characteristic with their both nurse knowledge and practices pre and post intervention. **Conclusion:** It was concluded that, there were relation between nurse's knowledge and their practices regarding to both safety measures and nursing care at labor room (post intervention), there was positive impact on nurse's knowledge, practices and compliance at labor room. **Recommendation:** it was recommended that, there was needed training program to overcome barriers as nurse's performance and compliance regarding safety measures in all maternity care units.

Key words: Safety measures, labor room, compliance.

Introduction

Safety measures are activities and precautions taken to improve safety, i.e. reduce risk related to human health. Common safety measures include: root cause analysis, visual examination for dangerous situations and laws such as cracks, peeling, and loose connections (Sorra and Neiva, 2007), safety factors as the medical adverse events still remain as a global challenge and no country has yet overcome all of its patient safety

problems data from well-funded and technologically advanced hospitals confirm that one in every ten patients admitted to hospitals is affected by an adverse event (incident rate of 10%). The situation is thought to be more challenging in developing countries with higher risk of patient harm due to the limitation of resources and lack of adequate infrastructures medical error is unacceptably among the five most common causes of preventable death and millions of patients are hurt each year due to unsafe care practices, Such a situation

has provoked global concern about patient safety issues, and exploring solutions to the problem in this context, the experiences of high-reliability organizations (HROs) in hazardous industries such as aviation and chemical industries are particularly valuable (Arabloo et al, 2012).

Implementation of standard protocols and procedures, training of employees, vendors, product users, instruction manuals, instructional videos, examination of activities by specialists, government regulation, industry regulation, self-imposed regulation of various types, statements of ethics, periodic evaluations of employees, departments, (Sorra and Neiva 2007).

A safe environment reduces the risk for illness and injury and helps to contain the cost of health care by preventing extended lengths of treatment and hospitalization, improving or maintaining a patient's functional status, and increasing the patient's sense of well-being) (Klingner et al, 2009). Labor is the physiological process by which a fetus is expelled from the uterus to the outside world. Determining whether a woman is in labor is sometimes difficult as painful uterine contractions alone are not sufficient to establish a diagnosis of labor. Typically, the diagnosis is reserved for uterine contractions which result in cervical dilatation and/or effacement. Bloody show (a small amount of blood with mucus discharge [i.e., mucus plug] from the cervix) may precede the onset of labor by as much as 72 hours. Occasionally, fetal membranes rupture with egress of amniotic fluid prior to the onset of labor, (WHO Emero, 2013).

Nurse's compliance can be influenced or controlled by a variety of factors like culture, economic and social factors, self-efficacy, and lack of knowledge or means. Guidelines that guide an individual's behavior exist in a variety of settings (including health care settings), but people do

not always comply with them. In order to explain and understand the factors that influence an individual's compliance with certain guidelines, which consequently may contribute to the adoption of certain behavior, a number of conceptual models or theories have been developed (Thirumalai A, 2010).

Aim of the study:

To investigate nurses' compliance to safety measures at labor room.

Research hypothesis:

To achieve the above aim the following hypothesis: should be through:

- Utilization of instructional guideline for safety measures will enhance a positive impact on nurse's knowledge and practices at labor room.

Subjects and methods:

Research design: quasi experimental study design was used.

Research Setting: The study conducted at labor department of Ain Shams Maternity University Hospital.

Type of Sampling: convenient sample was utilized in present study included all nurses working at labor room (n=45).

Three tools used to collect data:

- I- **First tool:** structured interviewing questionnaire sheet designed, it consist of two parts:

Part I: includes socio-demographic characteristics for nurses (such as age, qualification, training, experiences ... etc.). This sheet filled by the nurses that provide caring for women at labor room.

Part II: Nurse's knowledge assessment sheet: It was designed to evaluate nurse's knowledge regarding safety measures (pre-post tests).

Scoring system for knowledge: it included three levels: a correct response was scored 3 while an incomplete correct was scored 2 and incorrect was scored 1 for each area of knowledge. The total nurses score was classified as the following: the nurses scored under 50 % were poor knowledge and scored 50% - <70% was fair knowledge, and scored above 70% was good knowledge.

II-Second Tool (Observational checklist):

It was used for investigating the practices of safety measures includes admission procedure, informed consent medications alteration, and standards infection precaution) through provide care for women at labor room. **The scoring system for practice** included three levels: 3 points for done, while 2 point scored to done incomplete and 1 for not done. Total satisfaction > 50 % was consider satisfaction, while < 50 % considers unsatisfaction practices.

III-Third Tool (Likert scale):

To assess nurses' satisfaction regarding utilization of the instructional guidelines, regard total satisfaction > 60 % was consider satisfaction, while < 60 % considers un satisfaction.

Content validity and reliability: The pilot study has been done to evaluate the feasibility, time, and cost of study. It carried out on 10 nurses (10%) to test the validity of the tools through jury committee of maternity and neonatal health nursing in Ain shams faculty. Nurses included in pilot study were included within total study sample.

Ethical considerations

The ethical research consideration in this study was included the following:

- The approval was obtained from the scientific research ethical committee in faculty of nursing at Ain Shams University before starting the study.
- The researcher was clarified the objective and aim of study to the subjects.
- The researcher assured and maintaining a confidentiality of the subjects.

II- Operational design:

The study sample included all nurses working at labor room (n=45) in the period from the 15th of July to the 31st of October 2015.

Field work:

Prior to data collection the necessary approval was secured from the director pf Ain Shams Maternity University Hospital. The sample included all nurses working in the designated sites (n=45).

A pilot study the pilot study has been done to evaluate the feasibility, time, and cost of study. It carried out on 10 nurses (10%) to assess to test the validity of the tools through jury committee of maternity and neonatal health nursing in Ain shams faculty of nursing. Nurses included in pilot study were including from total study sample.

All nurses gave verbal consent and approved to complete the self-administered questionnaire. The time required to complete the questionnaire was about (15- 20) minutes.

- The data was collected at labor room of Ain Shams University Maternity Hospital for three days per week.

- Each nurse was observed during performance of all practices regarding safety measures according to standardized observational checklist from starting until ending and after then starting to observe another practice for the same nurse or another nurse at delivery room. The researcher takes about 25-30 minute for each checklist.
- Instructional guidelines were illustrated for nurses to improve their practices regarding safety measures at labor room.
- The researcher divided the sample into groups (each group include (2-5 nurses). Also each group of nurses was obtained instructional guidelines secessions, one hour for each session. Accordingly, nurses' satisfactions were assessed regarding the instructional guidelines.

Statistical analysis:

- Data entry was done using excel computer soft ware package. Statistical analysis was done using: descriptive statistics in the form of frequencies and percentages were calculated using a computer software package (SPSS version 11).

Results:

Table (1) regarding general characteristics of the studied sample, three quarters of nurses (75.6%) their age ranging from 20-30 years with mean of age was (25.6±3.4). Also more than half of nurses (55.6%) had less than 5 years of experiences, while the minority of them (6.7%) their years of experiences were from 5 to 10 years. The same table shows that slightly more than two thirds (68.9%) of nurses were single and the minority of them (13.3%) were married.

Table 2: summarized the nurse's barriers regarding safety measures it was 60%, 60% and 68.9 % of nurses had mild barriers regarding decrease training programs, decrease technological methods in nursing field and nurse's resistance change respectively. While (100% and 91.1%) respectively of them had moderate barriers regarding decrease knowledge available about safety measures and source of knowledge not available. Moreover,(40) of had sever barriers regarding each of them shortage of nurses number, decrease equipment and supplies and decrease technological methods in nursing field. While, another (60%) of them had sever barriers regarding inability of nurses to read evidence based researches about safety measures.

Table 3: Concerning nurse's knowledge regarding to safety measures at labor room, this table illustrates that; 73.3%, 50%, 50% and 50% of nurses had incorrect knowledge about types of safety, hierarchy of controls (from most effective to least effective),patients falls reasons, and fire prevention plan pre intervention. As compared to 4, 4 %, 22.2 %, 22.2% of them had incorrect knowledge about Hierarchy of controls (from most effective to least effective) and patient's false reasons post-intervention with statistical significant difference between pre/post interventions.

Table(4): Concerning nurse's practices relating safety measures at labor room, this table illustrates that; 100%, 73.4%, 64.4%, and 55.5% of nurses had not done the document vital signs, report blood pressure greater than 140/80 mm Hg, determine whether amniotic membranes have ruptured, describe any vaginal discharge monitor intravenous fluids if ordered and document allergy and illness history pre intervention, While, this rate reduced to 8.9%,62.2%,0%, and 51.1% respectively post intervention.

Table (5) concerning to nurses degree of satisfaction about safety measures, reveals 73.4% of nurses were high degree satisfaction regarding safety measures and nursing care at labor room.

Table (6): This table reveals that significant correlation was found between both nurses' knowledge's regarding to safety measures with their age, level of education (highly qualified nurse), experience and training program (p value < 0.05) pre and post intervention.

Table (7): This table reveals that, significant correlation was found between both nurses' practices regarding to safety measures &nursing care at labor room in relation with their age, level of education (highly qualified nurse), experience and training program (p value < 0.05) pre and post intervention.

Table (8) this table shows that significant positive correlation between nurses' practices and their knowledge about safety measures and nursing care at labor room (p value = 0.000).

Table (9): this table illustrates that there were significant correlations between level of total nurse's knowledge about safety measures and nursing care with their safety measures barriers in labor room pre-post intervention.

Table (10): This table illustrates that, there were significant positive correlations between level of total nurse's practices about safety measures and nursing care and their safety measures barriers in labor room pre - post intervention.

Table (1): Distribution of nurses by their demographic characteristics

Items	No =45	Percent
Age (years):		
< 20	4	8.9
20>30	34	75.6
30-35	7	15.6
Mean ± SD	25.6±3.4	
Qualification:		
Diploma	16	35.6
technical Institute	17	37.8
Bachelor	5	11.1
Special diploma	2	4.4
Nuring assistant	5	11.1
Experience(years):		
< 5	25	55.6
5-10	3	6.7
> 10	17	37.8
Marital status:		
Single	31	68.9
Married	6	13.3
Divorced	8	17.8

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Table (2): Distribution of nurse's regarding safety measures barriers in labor room pre intervention (n =45)

Items	Barriers					
	Mild		Moderate		Sever	
	No	%	No	%	No	%
- Shortage of nurse's number.	0	0	27	60.0	18	40.0
- Decrease equipment's and supplies.	0	0	27	60.0	18	40.0
- Decrease training programs.	27	60.0	4	8.9	14	31.1
- Decrease knowledge available about safety measures.	0	0	45	100	0	0
- Decrease technological methods in nursing field.	27	60.0	0	0	18	40.0
- Source of knowledge not available.	4	8.9	41	91.1	0	0
- Inability of nurses to read evidence based researches about safety measures.	4	8.9	14	31.1	27	60.0
- Nurses resistance to change.	31	68.9	0	0	14	31.1

Table no (3): Distribution of nurse's knowledge regarding safety measures at labor room (pre – post intervention)

Knowledge	Pre intervention			Post intervention			X2 Test
	Correct	Incomplete correct	Incorrect	Correct	Incomplete correct	incorrect	
	%	%	%	%	%	%	
- Definition of safety measures	95.6	2.2	2.2	95.5	2.2	2.2	29.5*
- Factors influencing the built environment	53	27	20	73.4	13.3	13.3	31.5*
- Types of safety	24.5	2.2	73.3	88.9	6.7	4.4	30.9*
- Hierarchy of controls (from most effective to least effective)	33	17	50	62.2	15.6	22.2	30.5*
- Standards of safety measures in hospital	77	20	2	91.1	6.7	2.2	25.9*
- Patients Falls reasons	36	14	50	64.5	13.3	22.2	27.9*
- National patient safety goals for hospital	40	15	45	73.4	15.6	8.9	29.8*
- Fire prevention plan	36	14	50	80	13.3	6.7	35.8*
- Evacuation plan	78	2	20	86.7	8.9	4.4	32.5*
- Electrical prevention plan	44.4	33.3	22.2	80	11.1	8.9	33.3*

Table (4): Distribution of nurse's practices regarding safety measures at labor room (pre – post intervention).

Practices	Pre			Post			X2 Test
	Done	Done incomplete	Not done	Done	Done incomplete	Not done	
	%	%	%	%	%	%	
Place identification bracelet on woman.	100	0	0	100	0	0	0.001
Obtain necessary information for labor record.	100	0	0	100	0	0	0.001
Document vital signs. Report blood pressure greater than 140/80 mm Hg.	0	0	100	80	11.1	8.9	23.2*
Record fetal heart rate. Report rates less than 110 or more than 160 beats/min.	0	100	0	97.8	2.2	0	24.3*
Determine whether amniotic membranes have ruptured. Describe any vaginal discharge.	0	6.7	100	22.2	15.5	62.2	25.6*
Assess uterine contractions.	0	6.7	100	94.6	4.4	0	24.1*
Monitor intravenous fluids if ordered.	13.3	13.3	73.4	88.9	11.1	0	25.6*
Document allergy and illness history.	13.3	22.3	64.4	51.1	22.2	48.9	24.5*
Document time of last food intake. Explain NPO status during labor.	55.1	28.9	15.6	86.7	6.7	6.6	21.2*
Obtain required consent signatures with appropriate witness signatures.	22.2	26.7	51.1	44.4	26.7	51.1	16.3**
Review results of laboratory tests from prenatal chart. Document blood Rh status.	22.2	33.3	44.5	82.2	4.4	13.3	24.6*
Orient woman and partner to unit.	36	14	50	80	13.3	6.7	27.9*
Secure the woman's personal items	22.2	24.5	55.5	40	24.5	35.5	26.9*
Total	29.6	27.2	43.2	74.4	10.9	14.7	21.1*

Table (5): Distribution of nurse's regarding to their degree of satisfaction about safety measures and nursing care at labor room post intervention (n =45).

Item	No	%
Degree of satisfaction		
Moderate	12	26.7
High	33	73.3

Table (6): Correlation between nurse's knowledge regarding to safety measures & nursing care at labor room and their socio-demographic characteristics (pre-post intervention).

Demographic characteristics	Nurses knowledge			
	Pre		Post	
	Correlation Coefficient	p- value	Correlation Coefficient	p- value
Age	0.69	0.05*	0.71	0.05*
Educational level	0.71	0.05*	0.72	0.05*
Experience	0.74	0.03*	0.76	0.032*
Training program	0.77	0.002**	0.92	0.00**
Marital status	0.36	0.59	0.4	0.61

Table (7): Correlation between nurse's practices regarding to both safety measures & nursing care at labor room and their socio-demographic characteristics (pre- post intervention).

Demographic characteristics	Nurses practices			
	Pre		Post	
	Correlation Coefficient	p- value	Correlation Coefficient	p- value
Age	0.65	0.05*	0.69	0.05*
Educational level	0.78	0.05*	0.79	0.04*
Experience	0.8	0.041*	0.82	0.031*
Training program	0.81	0.042*	0.92	0.002**
Marital status	0.22	0.95	0.25	0.93

Table (8): Correlation between nurse's practices and their knowledge regarding to both (safety measures & nursing care) in labor room pre intervention.

Nurses knowledge	Nursing Practices	
	Safety Measures	Nursing Care
Correlation Coefficient (r)	1.670	1.622
p- value	0.000*	0.000*

Table (9): Correlation between Level of total nurses knowledge about safety measures and nursing care with safety measures barriers in labor room pre and post intervention.

Level of total nurses knowledge	Barriers			Total	r-Test
	Mild n =11	Moderate n =20	Sever n =14		
pre:	%	%	%	%	
Satisfactory	1.8	20	8.8	46.7	0.69**
Unsatisfactory	6.6	24.4	22.2	53.3	
post:					
Satisfactory	24.4	42.2	20	86.7	0.83**
Unsatisfactory	0	2.2	11.1	13.3	

Table (10): Correlation between Level of total nurses Practices about safety measures and nursing care with safety measures barriers in labor room pre and post intervention.

Level of total nurses Practice	Barriers			Total	r-Test
	Mild n=11	Moderate n =20	Sever n =14		
Pre:	%	%	%	%	
Satisfactory	15.5	4.4	0	19.9	0.70**
Unsatisfactory	8.8	40	31.1	79.9	
Post:					
Satisfactory	24.4	40	2.2	66.7	0.91**
Unsatisfactory	0	4.4	28.9	33.3	

Discussion:

The problems of errors in health care and serious safety issues, fundamental changes of health care process, culture, and the physical environment are necessary and need to be aligned, so that the caregivers and the resources that support them are set up for enabling safe care.

This provides a unique opportunity to use current and emerging evidence to improve the physical environment in which nurses and other caregivers work and thus improve both nurse and patient outcomes (WHO 2010).

Regarding general characteristics of the studied sample, the present study revealed that, three quarters of nurses their age ranging from 20-30 years with mean of age was (25.6+3.4). Also more than half of nurses had less than 5 years of experiences, while the minority of them their years of experiences were less than 10years. The same table showed that slightly more than two thirds (of nurses were single and the minority of them were married).

The present study was disagreed with (Ali, F, 2014), reported that the majority (148) of the respondents were married. Apart from their midwifery certificate, their highest educational qualification was secondary

school additionally, they were mainly certified NMs and with more than 5 years' experience in obstetrics and gynecology unit.

The previous result was the same line with **(Thirumalai A 2010)**, who studied barriers, that were mentioned by nurses caring for high patient acuity, inability to answer patient call lights as soon as possible, lack of communication during handoff, floor layout preventing visual access of patients, patients' mental status and ability to cooperate.

The previous finding was supported by **(Baker M and Attalla H, 2012)**; the study revealed that most of study indicated the common barriers to comply with infection control precaution as lack of knowledge then lack of equipment's.

Concerning nurse's knowledge about safety measures at labor room, the present study illustrated that; half nurses had incorrect knowledge's pre intervention, while most of them had correct knowledge's post intervention.

The present study agreed with the results of pretest examination of knowledge, attitude, and practice of health care personnel at Khartoum North Teaching Hospital which showed poor knowledge about the use of protective barriers such as gowns, gloves, head covers, and masks, **(Abdullah, N et al 2007)**.

The present study disagree with **(Mohammed N, 2009)** in the area of knowledge and attitudes of medical personnel on standard precautions of infection control it has been found that the higher degree of adherence is among the midwives and this may be due to the longer period of experience in labor rooms and the inclusion of infection control program in their basic nursing education syllabus.

Concerning total nurse's practices about safety measures and nursing care at labor room, the current study illustrated that, three quarters of nurses had unsatisfactory practices at labor pre intervention, while most of them had satisfactory practices post intervention. This results reflecting that the increase rates of incorrect practice pre intervention return to these nurses not received any training programs about safety measures, nursing care at labor room, so they need to provide them by training programs to improve their level of practices.

In addition, the result current study revealed that, the most common practices that not done completely were; document vital signs, report blood pressure greater than 140/80 mm Hg, determine whether amniotic membranes have ruptured, describe any vaginal discharge and assess uterine contractions. While, monitor intravenous fluids if ordered and document allergy and illness history practiced two thirds of nurses.

The previous finding was supported by **(John et al, 2011)** the study revealed that most of study indicated the common barriers to comply with infection control precaution as lack of knowledge then lack of equipment's.

Summarized the nurses barriers regarding safety measures, it was found that, slightly more than one quarter of them reported had mild barriers, while slightly less than half of them had moderate barriers, and slightly less than one third had high barriers. Also this finding reflecting they more need for this educational guideline to alleviate these barriers.

As regards the correlation between nurses knowledge and their characteristics, the present study revealed that, significant positive correlation was found between both nurses' knowledge's regarding to (safety measures &nursing care) at labor room in relation with their level of

education (highly qualified nurse), experience and training program (p value < 0.05) pre intervention. While in relation with their level of education (highly qualified nurse) (p value < 0.05).

The present study was agree with (Ahmed et al, 2012) demonstrated that (30%) of nurses who were aged more than 25 years their knowledge were good compared with only (11.4%) of nurses who were at less than 25 years with significant difference, however these percentage increased significantly after receiving the educational booklet especially for those at age of more than 25 years than who were less than 25 years (46.9% VS 20% respectively).

In addition, the result of current study revealed that the nurse's reported that the main barriers found at labor room were shortage of nurses, decrease equipment's and supplies, inability nurse read evidence based researches about safety measures, decrease technological methods in nursing field, decrease training programs and decrease knowledge available about safety measures.

As regards the correlation between nurse's practice and their characteristics, The present study illustrated that, Significant the correlation was found between both nurses' practices regarding to (safety measures & nursing care) at labor room in relation with their level of education (highly qualified nurse), experience and training program (p value < 0.05) pre intervention, While Significant correlation with their level of education (highly qualified nurse) and experience (p value < 0.05) post intervention.

Moreover, the present study reported that, Significant correlation between nurses' practices and their knowledge about safety measures and nursing care at labor room (p value = 0.000), while between nurses' practices and with their knowledge about safety measures and nursing care at labor room (p value = 0.000). This finding was in accordance with (Fashafsheh et al, 2016)

showed that, There are an association between age, education, work experience, and compliance with standard precautions at $p < 0.05$ (0.000, 0.031, and 0.043) respectively. At the same time no significant association between training courses and compliance to standard precautions at $p < 0.05$ (0.191).

In addition, it was surprising to find that all nurses were highly satisfied with utilization of an instruction guideline. Also positive significant correlation between practice and barriers while implementing an instruction guideline and intended to utilize an instruction guideline in the future although presence of these barriers. This was directed to our attention towards the importance of reapplication of an instruction guideline to all maternity at any clinical health setting.

The present study agree with (Ahmad et al, 2012), it was clear that slightly more than one-half of their practices of universal precautions were adequate before receiving the booklet compared with more than three-quarters after receiving the booklet and those who were inadequate before receiving the booklet decreased to be just (21.5%) of the total sample after receiving the booklet.

In addition, the result of the previous study established a relationship between nurses' knowledge with adequacy of clinical practice only one-fifth of them who had good knowledge performed adequate practice regarding universal precautions however after receiving the educational booklet a significant improvement in their knowledge which in turn reflected adequate practice as (33.3%) who had good knowledge their practice were adequate (Ahmad et al. (2012) In addition, the present study the same line with (Lee, et al, 2011), and colleagues emphasis that knowledge increases among nurses after development a program and nurses reported that knowledge are important in their work.

Conclusion:

In the light of the study findings, it was concluded that, nurse's knowledge and practices regarding safety measures were satisfied with instructional guidelines.

There were relation between nurses knowledge and their practices regarding to both safety measures compliance and nursing care at labor room, still facing barriers as shortage of nurses number , shortage of equipments and supplies as well as needs to periodical up dated training programs.

Recommendations:

○ it was recommended that, there was needed training program to overcome barriers as nurse's performance and compliance regarding safety measures in all maternity care units.

○ Enhance administrative support and motivation system for nursing staff to inform and compliance with safety measures.

○ Further research is needed on wide scale to determine the barriers against compliance with safety measures practices at labor room, cesarean section, antenatal and postnatal

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