Nurses' Compliance with Oxytocic Administration Guidelines during Labor

Naglaa Zaki Hassan Roma, Demonstrator
Obstetrics and Gynecologic Nursing, Faculty of Nursing, Alexandria University

Jilan Ali Ibrahim Al-Battawi, Assistant Professor
Obstetrics and Gynecologic Nursing, Faculty of Nursing, Alexandria University

Nevertity Hassan Zaki, Assistant Professor
Obstetrics and Gynecologic Nursing, Faculty of Nursing, Alexandria University

Abstract

Oxytocic administration errors are a significant source of professional liability. Non compliance with oxytocic drug guidelines is a serious, widespread problem among nurses. ***Objective:*** *The aim of this research was to identify nurses' level of compliance with oxytocic administration guidelines during labor.* ***Setting:*** *The study was conducted in four hospitals in Alexandria, El-Shatby Maternity University Hospital, EL-Gomhoria Hospital, Gamal Abdel Nasser Hospital and Dar El-Welada Hospital.* ***Subjects:*** *The study sample composed of 120 nurses working in the previously mentioned settings and providing direct care for laboring women.* ***Tools:*** *Three tools were validated and used: Tool I: Socio-demographic data questionnaire sheet, Tool II: Nurses' knowledge about Oxytocic administration questionnaire and Tool III: Nurses' compliance with oxytocic administration observational checklist.* ***Results:*** *The main study findings showed that only 13% of the subjects had good total score of knowledge , while the majority of them 87% had fair and weak of total score (54% &33%) respectively. Regardless of total score of knowledge (good, fair or weak) all nurses had poor practice. There were also a significant positive relationship between nurses' knowledge about oxytocic administration and their socio-demographic characteristics (position, the original residence and type of the family) and their nature of work (specifically the number of women assigned to each nurse per shift).* ***Conclusion:*** *all study subjects had weak knowledge and poor practices related to oxytocic administration.* ***Recommendations:*** *It is recommended that midwifery nurses should seek continuing education, as well as attending pre-service and in-service training programs on the safe oxytocic administration guidelines should target all maternity nurses periodically and regularly.*

Introduction

Childbirth is one of the most marvelous and memorable event in a woman's life. It is a physiological process during which the products of conception; (the fetus, membranes, umbilical cord, and placenta) are expelled outside the uterus[(1)].

Induction of labor can start with medications in many different ways such as prostaglandins (cytotec) and oxytocic (pitocin or syntocinon), or by mechanical methods for dilation of the cervix. This can be done through the use of a balloon or foley catheters and hygroscopic dilators. Other techniques include saline injection, nipple stimulation, intercourse, acupuncture and Complementary Alternative Medicine Methods[(2)].

In fact oxytocic was designated as a high-alert medication in 2007 by the Institute for Safe Medical Practice. High-alert medications are recognized as those medications that require special considerations and precautions before,

during and after its administration. Where errors are a significant sources for professional liability. According to The American College of Obstetrics and Gynecologists (ACOG, 2004) professional liability survey, 21.9% of claims had involved neurologically impaired babies, and 14.7% had involved stillbirths or neonatal deaths among labors managed with Oxytocin. Approximately one half of paid claims had involved allegations of Oxytocin misuse[3].

The ultimate goal of an active management of labor is to improve the quality of care of laboring women, and thus decrease maternal mortality and morbidity. This could be achieved through promoting nurses' compliance with high alert medications such as Oxytocic administration guidelines during labor. The most definite and important knowledge in the field of patient safety is how to prevent harm to patients during treatment and care[4].

Practically, compliance is a state of being in accordance with established guidelines, specifications, or legislation. [5] Compliance in this study is operationally defined as the degree of constancy with which the nursing workforce follows the Oxytocic administration guidelines during labor. This can be measured through Oxytocic administration observational checklist. Compliance with drug guidelines is considered as a fundamental concept for accountability, autonomy, competence and delegation that are considered in determining scope of practice which also relate to the profession's role in medication management[6].

However, non Compliance with drug guidelines is a serious, widespread problem among nurses. Understanding and utilizing the Scope of Nursing and Midwifery Practice Framework and its determinants in conjunction with professional guidance on medication management can facilitate the nurse's actions and response to medication errors as an individual and team member[7].

Unfortunately, non compliance with drug administration guidelines results in Patients' injury. This is the most common type of adverse event that occurs in the in-patient settings. When medication errors result in patient injury, this adversely influence the patient, health care providers, and the health setting. The institution of medicine has estimated that at least 1.5 million preventable adverse drug events occur annually in the United States[8].

Experts had identified that even with a sound knowledge base and a belief in the efficacy of adherence to drug administration guidelines, yet many healthcare workers remain noncompliant with drug administration guidelines. However, more interventions to determine barriers that cause noncompliance among the maternity nurses would enhance their compliance with drug administration guidelines. [9]

Significantly the maternity nurse as a member of the health team could play a crucial role in promoting compliance with guidelines of medication administrations. Especially with women during labor, who have been given high alert medication as (Oxytocic). The nurse has a very important role before, during and after administration. Definitely she has a greater interaction with laboring women than other health care member and can have a significant influence on compliance[10].

Significant of the study:

The maternity nurse has a vital role to assume responsibility for the management of obstetric and gynecologic care essential for low risk patients through Observation, assessment, proper notifications to a physician and proper interventions to render the highest quality of obstetrical care. She should ensure laboring women' knowledge about the childbearing process and her ability to take informed consent of her drug plan and contribute to the decision-making regarding their labor. The ultimate goal of this role is reduced medication errors with high alert medication (Oxytocic) by

following the guidelines of medication administration (in labor). These errors are the main source of serious maternal and fetal complications. Reducing these errors, save maternal & fetal life[11].

Aim of the Study

The study aimed to identify nurses' level of compliance with Oxytocic administration guidelines during labor.

Research Question:

What are the nurses' level of compliance with Oxytocic administration guidelines during labor?

Materials and Method

Materials

Design: A descriptive design was utilized.

Setting: The study was conducted at four labor units in the four main available governmental hospitals that provide obstetric and gynecological services in Alexandria.

1-El-Shatby Maternity Hospital (Alexandria University) 59 nurses.

2-EL-Gomhoria Hospital (Ministry of Health) 18 nurses.

3-Gamal Abdel-Nasser Hospital (Heath Insurance) 19 nurses. Dar El-Welada Hospital (Medical Care Organization) 24 nurses.

Subjects: All nurses working at the previously mentioned settings and providing direct care for laboring women (120) were included in the study.

Tools: Three tools were developed by the researcher based on the review of current, relevant and updated literature:

Tool I: Basic data Questionnaire sheet

It was developed by the researcher to collect basic data about the study subjects such as age, academic preparation, position and years of working experience.

Tool II: Nurses' knowledge about Oxytocic administration Questionnaire

It entailed 51 items, including 6 main groups as follows: General knowledge about oxytocic (N=10), uses of oxytocic (N=4), complication and side effect (N=4), nurses' role before administration of oxytocic (N=9), nurses' role during administration (N=16) & nurses' role after administration (N=8).)

-Nurses' response to each item had varied between incorrect answer (1), Correct, but incomplete (2), correct and complete (3).

-The total score ranged between (51 – 153).

Accordingly, each nurse's knowledge score was ranked as follows:

- Poor for a total score of < 85
- Fair for a total score of 85 < 119
- Good for a total score of ≥119

Tool III: Nurses' compliance with Oxytocic administration observational checklist[19]

This tool was adopted by the researcher from The WHO guidelines for medication administration (in labor)[19]. It used to assess nurses' practices related to Oxytocic administration during labor. Itincludes 33 items grouped in 3 main sections as follows:

- Nurses' role before administration of Oxytocic (N=9)
- Nurses' role during Oxytocic administration (N=16)
- Nurses' role after Oxytocic administration (N=8).
  - Nurses' performances were scored:
  - Completely done (3), incompletely done (2) and wrong or not done (1).

- The total score ranged between (33 – 99)
- Nurses' practices were ranked as follows:

- Poor for a total score of < 55
- Fair for a total score of 55 < 77
- Good for a total score of ≥77

Method

The study was executed according to the following steps:

1- An Official letter was obtained from the faculty of nursing, Alexandria University and directed to the executive of health affairs in Alexandria as well as the concerned hospitals.

2- Tool one and two were developed by the researcher after an extensive review of recent relevant literature. Tool three was adopted from The WHO guidelines checklist for medication administration (in labor). The three tools were tested for content validity by a jury of 5 experts in the field. Its reliability was tested by test-retest technique.

3- A pilot study was carried out on 12 nurses from the previously mentioned setting, who were excluded from the study sample. It was performed to detect the applicability, feasibility, assure clarity of the tool.

4- The researcher observed nurses during their administration of oxytocic using the observational checklist (tool three). Each nurse was observed: during the morning shift (8am to 2pm) & during the evening shift (2pm to 8pm).

5- After completing the observations by using tool three, tools one and two were distributed to the nurses during the break time to assess their knowledge about oxytocic administration.

6- The duration of data collection was three days/ week over a period of approximately 12 weeks from 18/3 to 20/6/2013, average 4-6 sheets/ day.

Ethical considerations:

For each recruited subject the following issues were considered: securing the subject's informed consent, keeping her privacy and right to withdraw at any time as well as assuring confidentiality of her data.

Statistical Analysis

Data analysis was carried out using SPSS program version 16. The collected data were categorized, coded, computerized, tabulated and analyzed. Frequency and distribution were used for describing and summarizing categorical data. Cross tabulation with percentages were used to explore relationships between variables. Appropriate tests such as arithmetic mean and Chi Square F (P): Fisher Exact Test & P for FET-Test at 0.05 level of significance were used.

Results

Table (1) shows that more than two-fifths (45.83%) were in their twenties. Almost three-quarters (73.33%) of them had a diploma level. The majority (85%) of them were staff nurses. Nearly three-fifths (58.33%) were from rural areas. More than two-thirds (70.83%) had nuclear families. More than half (56.67%) of them did not believe that their income is adequate. The majority (83.33%) were married. Concerning their nature of work approximately half (47.5%) of them had 10 to less than 25 years experience in midwifery. More than two-thirds (69.17%) were working 8 hours/day, while less than one-third (30.83%) of them were working 12 hrs/day. The vast majority (93.33%)

were working mainly in the morning shift. The number of women assigned to each nurse by the end of the shift was 5-8 as reported by the majority (88.33%) of them.

Table (2) clarifies that Training programs were not attended by most (93.33%).of the study subjects. Number of programmes among those who attended them was 1-2 & 5-6 among equal percent (37.5%) of nurses, while 25% of them had 3-4 training program. However, the mean number of training programmes was 3. 25 $\pm$ 1.909. Time since last training program was 2 to 4 years among half (50%) of nurses agencies provided training program/s were ministry of health and university as reported by equal percent (50%) of nurses.

Table (3) exhibits that the majority (90.83%, 94.17% and87.50%) of the present study subjects (gave correct &incomplete answers about the reasons for such administration, oxytocic are used in which stage of labor and sources of oxytocic respectively. The vast majority (87.5% and 88.33%) gave incorrect answers or did not know the relation between Oxytocic and milk expression and the relation between Oxytocic and bonding respectively. A minority (13.33%) of them gave correct & complete answers about warning signs during oxytocic administration. More than three-fifths (64.17%) gave correct & complete answers about the appropriate way of oxytocic administration. Less than one-fifth (18.33%) gave correct & complete answers about the type of labor in which oxytocic are administered. Less than half (41.67%) gave correct & complete answers about the effect of oxytocic on uterine muscle. Indeed 85.83% gave correct & incomplete answer regarding factors affecting oxytocic effectiveness.

Table (4) illustrates that the majority (85%) of the present study subjects gave incorrect answers for the trade names of drugs used to stimulated uterine contractions. Only 0.83% and 8.33% gave correct & complete answer regarding indications and contraindications of oxytocic, respectively. More than two–thirds (70%) gave incorrect answers or didn't know about the dose of oxytocic available in labor unit.

Less than two-fifths (36.67%) of the present study subjects gave correct & incomplete answers about the side effects and complications of oxytocic for the mother. Only 1.67% of them gave correct & complete answers about the side effects and complications of oxytocic for the fetus. One-quarter (25%) of the subjects gave correct & incomplete answers about side effects and complications of oxytocic for the newborn. Only 1.67% of the present study subjects gave correct & complete answers about nursing management of oxytocics' side effects and complications.

Figure (1) indicates the percentage distribution of nurses according to their total score of knowledge about Oxytocic administration. It was obvious that only 13% of them had good total score, while the majority 87% of them had fair and weak of total score (54% &33%) respectively.

Figure (2) explicates the number and percentage distribution of nurses according to their compliance before Oxytocic administration. It was observed that around two-third (65%) of them did not make sure that gestational age is 39 weeks or more. Two-third (66.67%) of them did not compare names of oxytocic with women's sheets. More than two -fifths (43.33%) of them did not assess the fetal heart rate. More than half (56.67%) of them did not Obtain informed consent. Equal percentages (33.33%) of the subjects either performed a complete pelvic examination completely or incompletely or didn't perform it (respectively).

Figure (3) illustrates the number and percentage distribution of nurses according to their compliance during oxytocic administration. It was noted that all them had never put labels on oxytocic infusion bottles as well as had never used electronic infusion pump. Around half (48.33% &

50.83%) of them had given it incompletely or irrespectively. almost all (98.33%) of the subjects did not dictated data of intake and output chart. The majority of the present study subjects (99.17%) didn't observe and record the fetal heart rate and contractions every 30 minutes and on an increasing or decreasing oxytocic infusion.

Figure (4) illustrates reveals the number and percentage distribution of nurses according to their practice after Oxytocic administration. The majority (99.17%) of them did not document vaginal exams findings as well as intake and output. Two-thirds (66.67%) of them did not document oxytocics' rate, FHR and contractions as well as observations notified to the physician. More than two fifths (49.17%) of them did not document maternal vital signs and blood pressure.

Figure (5) indicates the percentage distribution of nurses according to their total score of compliance with Oxytocic administration during observation. It was obvious that all nurses had poor compliance.

Table (5) clarifies the relationship between nurses' knowledge about oxytocic administration and socio-demographic characteristics. There was no statistically significant were found between nurses' total score of knowledge about Oxytocic administration and their socio-demographic characteristics, except level of education (P=0.008), position (P=0.003), the original residence (P=0.001) and type of the family (P=0.031).

Table (6) shows the relationship between nurses' knowledge about oxytocic administration and their nature of work. No statistically significant relationship was their nature of work except for the number of women assigned to each nurse (P=0.046).

Discussion

Transition from pregnancy to labor is a sequence of gradual events. Labor is known as the culmination of pregnancy and an event with a great psychological, social and emotional meaning for the mother and her family[12]. Induction of labor is defined as the process of using drugs or other methods to artificially start labor by stimulation of uterine contractions to cause the delivery before spontaneous labor occurs[13]. The spontaneous labor is not a timely event. Labor is typically induced using one or more of the following methods: cervical ripening agents, artificial rupture of membranes or uterine stimulation with oxytocic[14].

Oxytocin is a hormone that originates in the hypothalamus which is secreted by the posterior lobe of the pituitary gland. Synthetic oxytocic is the most commonly used drug for the induction of labor in viable pregnancies. It is given through the intravenous route. It is used exclusively to stimulate the pregnant uterus to contract because it allows precise measurement of the amount of medication being administered, and rapid discontinuation of drug when side effect occurs[15].

The results of the present study revealed that most of study subjects had poor knowledge regarding Oxytocic administration. This finding is not surprising as the majority of them had diploma level. On the other hand, the majority of them did not attend any training programmers about Oxytocic administration. This could explain why the majority of them had lack of enough knowledge about Oxytocic administration. This current finding is similar to that of Deepak N et al, (2011) he had done a study titled " Knowledge, attitudes, and practices related to uterotonic drugs during childbirth". Their results had indicated that the majority of their study subjects had poor knowledge regarding Oxytocic administration[16].

All nurses in the present study had poor compliance with oxytocic administration guidelines. This result is in agreement with a study done by Nurdan D et al., (2005) study titled "Role of doctors

and midwives nurses in oxytocic administration in Istanbul". Their findings showed that 84.9% of midwives and 76% of doctors demonstrated poor compliance with oxytocic administration guidelines. They rationalized their results by the lack of oxytocic protocol[17].

Only 12.5% of the present study subjects had good total score of knowledge, among almost all nurses of all age groups, with moderate and high levels of nursing education and with shorter and longer years of experience. This finding is in agreement with the findings of Sathyalatha R, (2001) study titled "assess present knowledge of staff nurses on oxytocic induction to mother during 1st stage of labor in view of developing a protocol for better management in maternity wards. He concluded that his subjects had poor compliance with Oxytocic administration, in addition to their weak knowledge about it[18].

The findings of the current study had revealed a statistically significant difference between levels of nurses' knowledge about Oxytocic administration and their socio-demographic characteristics as position, original residence and type of the family. This finding was not expected since elder nurses, those with higher education or longer years of experience were supposed to have better knowledge about Oxytocic administration. But lack of training programs about Oxytocic administration and absence of Oxytocic administration guidelines to be followed may be the reasons for their weak knowledge. The current finding is not consistent with the results of Walker D et al, (2002) study titled "An economic Analysis of midwifery training programmers in south Kalimantan, Indonesia". They reported that there was a statistical relationship between the years of experience of the maternity nurse & their skill as well as their knowledge[19].

The relationship between nurses' knowledge about Oxytocic administration and their level of education a statistically significant relation in the present study, where bachelor holders & those of even higher education have good knowledge, compared to nurses with technical and diploma degrees. This finding is supported by the results of Dhanya P, (2010) the study titled " assess the knowledge of staff nurses on Oxytocic induction to mother during first stage of labor at selected hospitals in Bangalore, Karnataka", he found that there was significant relationship between the midwifery nurses knowledge and their level of education[20].

The relationship between nurses' knowledge about Oxytocic administration and their working position was found to be statistically significant in the present study, where the majority of supervisors had satisfactory or good total score, compared to staff nurses. The current finding is consistent with the results of Farrell (2005) study titled "Intrapartum Care review and Guidelines", which found that there was significant relationship between the midwifery nurses knowledge and their working position[21].

The relationship between nurses' knowledge about Oxytocic administration and their original residence was found to be statistically significant in the present study, where a sizeable proportion of nurses whose original residence are rural area have high knowledge than nurses whose original residence are urban area. This may be due to the fact that rural area culture is characterized by close relationships between people and more contact with each other. This result is in accordance with the findings of Chapman (2010), who observed that different types of culture mean that different people have different meanings of work[22].

The relationship between nurses' knowledge about Oxytocic administration and their nature of work specifically the number of women assigned to each nurse per shift) was found to be statistically significant in the present study. Where two-thirds of the subjects who were assigned to

9-15 women at the end of the shift had weak knowledge. This may be due to lack of time to read and to be involved in professional activities and attend training programs about Oxytocic administration. This finding is in line with Bhurtun H, (2009) study titled "Job satisfaction of nurses in Mauritius". He found that there was a significant relationship between the midwifery nurses knowledge and their nature of work[23].

T The relationship between nurses' knowledge about Oxytocic administration and their attendance of training programs was not statistically significant in the present study. This result is not in congruence with the finding of Clayworth S, (2000) study titled " The nurse's role during oxytocic administration" He reported a statically significant relationship between the midwifery nurses knowledge and their attendance of training program about oxytocic administration[24].

Conclusion

The study revealed that more than half of the study subjects had fair knowledge, one third of them had poor knowledge about oxytocic. Unfortunately all study subjects had poor compliance with administration of oxytocic guideline.

Recommendations

- Policy makers and head managers must work hardly to make universal written guidelines on safe oxytocic administration in every health institution.
- Midwifery nurses should follow universal written oxytocic guidelines to practice oxytocic induction effectively through adequate supervision and monitoring.
- Midwifery nurses should seek continuing education about high alert medications (as Oxytocic) which could be done through attending workshops, conferences, distance and web learning.
- Pre-service and in-service competency-based training on the safe oxytocic administration guidelines should target all maternity nurses periodically and regularly.

Further studies:

- Investigate barriers against nurses' compliance with drug administration guidelines.
- Assess effectiveness of planned teaching programs on knowledge and practice of midwives regarding oxytocic induction during labor.

Table (1): Number and percent distribution of the study subjects according to their socio-demographic characteristic& their nature of work.

Socio-demographic characteristics	No (120)	%
Age (year):		
21-	55	45.83
35-	35	29.17
45- 59	30	25.00
Mean & SD:	36.97 + 9.486	
level of education:		
• Diploma	88	73.33
• Technical	18	15.00
• Bachelor & more	14	11.67
Employment Position:		
• Staff nurse	102	85.00
• Supervisor	18	15.00
Type of the family:		
• Nuclear	85	70.83
• Extended	35	29.17
Original residence:		
• Rural	70	58.33
• Urban	50	41.67
Family income/month:		
• More than enough	11	09.16
• Just enough	41	34.17
• Not enough	68	56.67
Years of experience in midwifery:		
<10	25	20.83
10-	57	47.50
25- 37	38	31.67
Mean & SD:	18.23 + 9.114	**Mean & SD:**
Working shift: #		
▪ **Morning**	112	93.33
▪ **Evening**	47	39.17
▪ **Night**	28	23.33
Number of women assigned to each nurse:		
2-4	8	06.67
5-8	106	88.33
9-15	6	05.00
Mean & SD:	6.74 + 1.785	

Frequencies are not mutually exclusive.

Table (2): Number and percentage distribution of the study subjects according to their attendance of training programs about oxytocic administration.

Attending training programs	No (120)	%
Attending training program/s:		
▪ **Yes**	8	06.67
▪ **No**	112	93.33
Numbers of program/s:	(n=8)	
1-2	3	37. 50
3-4	2	25. 00
5 - 6	3	37. 50
Mean & SD:	3. 25 + 1.909	
Duration of training program/s (days):	(n=8)	
1-3	6	75.00
7-13	2	25.00
Mean & SD:	3.75 + 4.268	
Time since last training program (years):	(n=8)	
< 1-<2	3	37.50
2-4	4	50.00
13	1	12.50
Mean & SD:	3.88 + 4.051	
Agency provided training program/s:	(n=8)	
▪ **Ministry of Health**	4	50.00
▪ **University**	4	50.00

Table (3): Number and percentage distribution of the study subjects according to their general knowledge about oxytocic administration.

General knowledge	No (120)	%
Reasons for administration:		
▪ Correct & complete	9	07.50
▪ Correct & incomplete	109	90.83
▪ Incorrect or don't know	2	01.67
Oxytocic are used in which stage of labor:		
▪ Correct & complete	6	05.00
▪ Correct & incomplete	113	94.17
▪ Incorrect or don't know	1	00.83
Sources of Oxytocic:		
▪ Correct & complete	6	05.00
▪ Correct & incomplete	105	87.50
▪ Incorrect or don't know	9	07.50
Relation between Oxytocic & milk expression:		
▪ Correct & complete		
▪ Incorrect or don't know	15 105	12.50 87.50
Relation between Oxytocic & bonding:		
▪ Correct & complete	11	09.17
▪ Correct & incomplete	3	02.50
▪ Incorrect or don't know	106	88.33
Warning signs be reported to the physician during administration:		
▪ Correct & complete	16	13.33
▪ Correct & incomplete	98	81.67
▪ Incorrect or don't know	6	05.00
Best way of Oxytocic administration during labor:		
▪ Correct & complete	77	64.17
▪ Correct & incomplete	1	00.83
▪ Incorrect or don't know	42	35.00
Type of labor in which Oxytocic are administered:		
▪ Correct & complete	22	18.33
▪ Correct & incomplete	93	77.50
▪ Incorrect or don't know	5	04.17
Effect of Oxytocic on uterine muscles:		
▪ Correct & complete	50	41.67
▪ Correct & incomplete	66	55.00
▪ Incorrect or don't know	4	03.33
Factors affecting Oxytocic effectiveness:		
▪ Correct & complete	10	08.33
▪ Correct & incomplete	103	85.83
▪ Incorrect or don't know	7	05.83

Table (4): Number and percentage distribution of the study subjects according to their knowledge about oxytocic' use, side effects & complications.

Knowledge about Oxytocic' use	No (120)	%
Drugs stimulated to uterine contractions:		
▪ Correct & complete	17	14.17
▪ Correct & incomplete	1	00.83
▪ Incorrect or don't know	102	85.00
Indications of Oxytocic :		
▪ Correct & complete	1	00.83
▪ Correct & incomplete	57	47.50
▪ Incorrect or don't know	62	51.67
Contraindication of Oxytocic:		
▪ Correct & complete	10	08.33
▪ Correct & incomplete	53	44.17
▪ Incorrect or don't know	57	47.50
Oxytocic dose available in labor unit:		
▪ Correct & complete	36	30.00
▪ Incorrect or don't know	84	70.00
Side effects & complications of Oxytocic for the mother:		
▪ Correct & incomplete	44	36.67
▪ Incorrect or don't know	76	63.33
Side effects & complications of Oxytocic for the fetus :		
▪ Correct & complete	2	01.67
▪ Correct & incomplete	51	42.50
▪ Incorrect or don't know	67	55.83
Side effects & complications of Oxytocic for the newborn:		
▪ Correct & incomplete	30	25.00
▪ Incorrect or don't know	90	75.00
Nursing management of Oxytocic' side effects & complications:		
▪ Correct & complete	2	01.67
▪ Correct & incomplete	55	45.83
▪ Incorrect or don't know	63	52.50

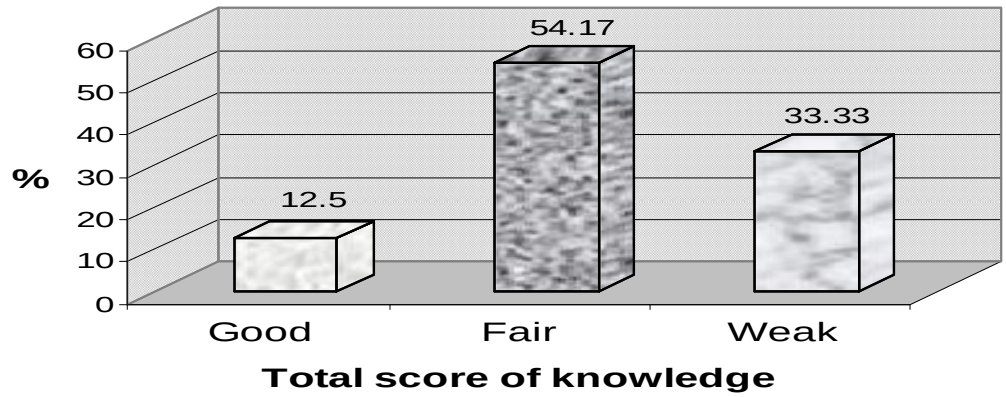

Figure (1): Percentage distribution of the study subjects according to their total score of knowledge about Oxytocic administration

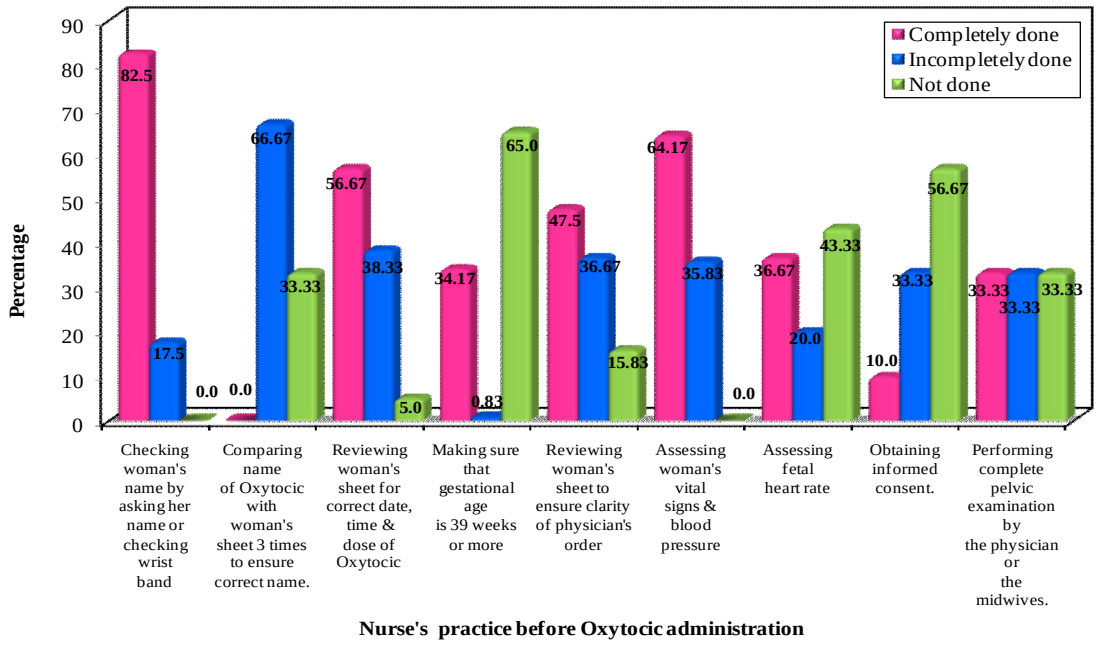

Figure (2): Number and percentage distribution of the study subjects according to their compliance before Oxytocic administration

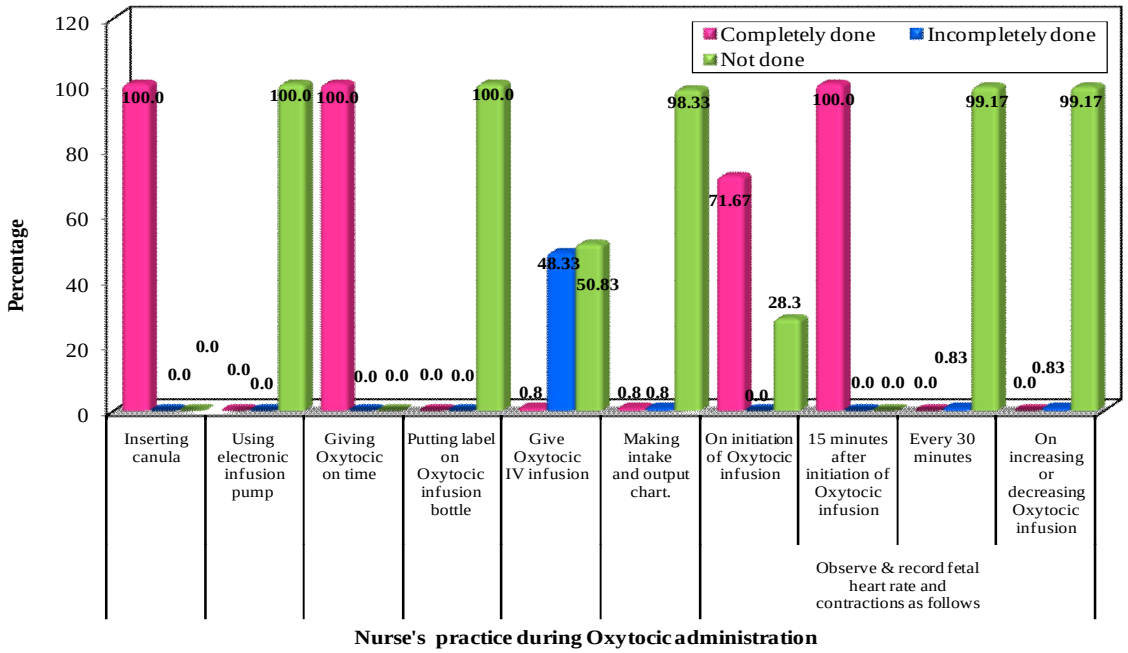

Figure (3): Number and percentage distribution of the study subjects according to their compliance during Oxytocic administration

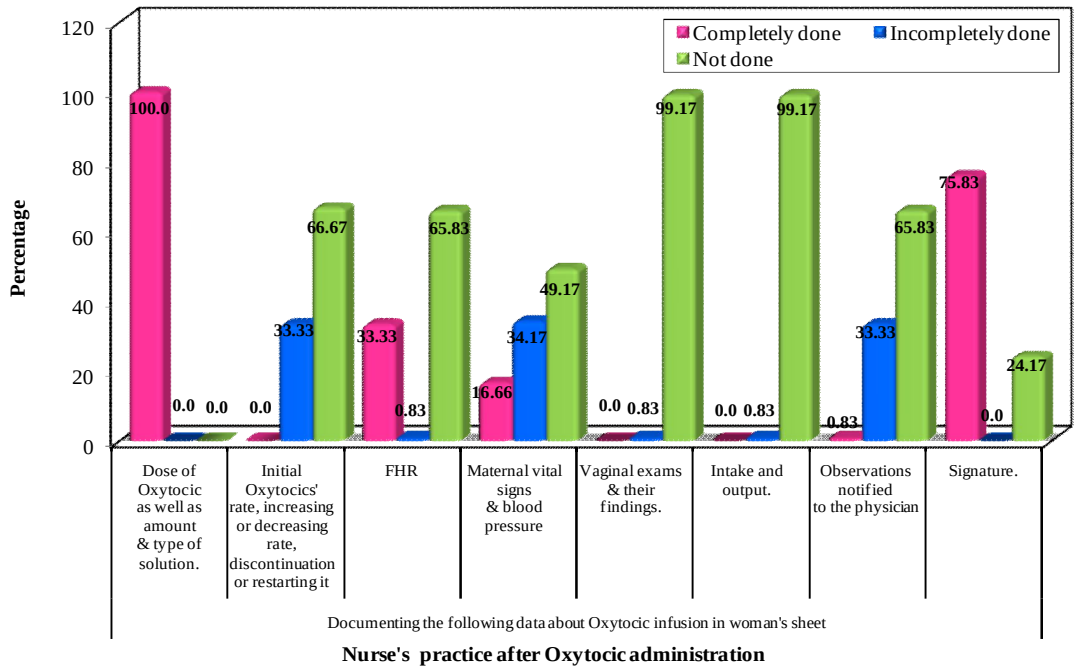

Figure (4): Number and percentage distribution of the study subjects according to their compliance after Oxytocic administration

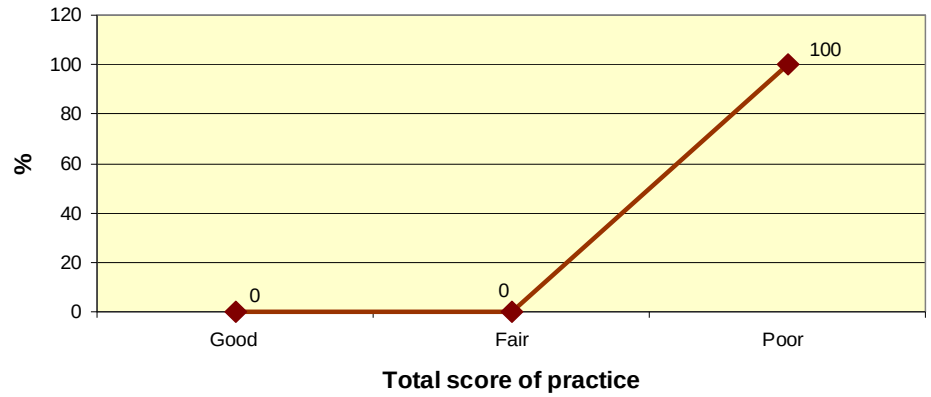

Figure (5): Percentage distribution of the study subjects according to their total score of compliance of Oxytocic administration during observation 1 & 2

Table (5): Relationship between nurses' total score of nurses' knowledge about Oxytocic administration and their socio-demographic characteristics.

Socio-demographic characteristics	Total score of knowledge						Total (120)		F/χ2 (P)
	Good (15)		Fair (65)		Weak (40)				
	No	%	No	%	No	%	No	%	
Age (year):									
21-	9	16.6	32	58.18	14	25.45	55	100	3.891 (0.421)
35-	4	11.43	18	51.43	13	37.14	35	100	
45- 59	2	06.67	15	50.00	13	43.33	30	100	
level of education:									
Diploma	11	12.50	47	53.41	30	34.09	88	100	
Technical	0	00.00	8	44.44	10	55.56	18	100	13.585
Bachelor & more	4	30.77	10	69.23	0	00.00	14	100	(0.008)*
Employment Position:									
Staff nurse	13	12.74	49	48.04	40	39.22	102	100	11.805
Supervisor	2	11.11	16	88.89	0	00.00	18	100	(0.003)*
Original residence:									
Rural	7	10.00	30	42.86	33	47.14	70	100	14.418
Urban	8	16.00	35	70.00	7	14.00	50	100	(0.001)*
Type of the family:									
Nuclear	7	08.23	45	52.94	33	38.82	85	100	6.956
Extended	8	22.86	20	57.14	7	20.00	35	100	(0.031)*

χ^2 (P): Chi-Square Test & P for χ^2 Test F (P): Fisher Exact Test & P for FET-Test *: Significant at $P \leq 0.05$

Table (6): Relationship between total score of nurses' knowledge about Oxytocic administration and nature of work.

Nature of work	Total score of knowledge						Total (120)		F/χ2 (P)
	Good (15)		Fair (65)		Weak (40)				
	No	%	No	%	No	%	No	%	
Years of experience in midwifery:									
<10	4	16.00	11	44.00	10	40.00	25	100	5.667
10-	9	15.79	34	59.65	14	24.56	57	100	(0.225)
25- 37	2	05.26	20	52.63	16	42.11	38	100	
Number of working hours/day:									
8	12	15.38	45	57.69	21	26.92	78	100	4.742
12	3	07.14	20	47.62	19	45.24	42	100	(0.093)
Working shift: #									
▪ Morning	13	11.61	59	52.68	40	35.71	112	100	3.592
▪ Evening	7	14.89	19	40.43	21	44.68	47	100	(0.464)
▪ Night	2	07.14	12	42.86	14	50.00	28	100	
Number of women assigned to each nurse:									
2-4	2	25.00	6	75.00	0	00.00	8	100	9. 664
5-8	11	10.37	55	51.89	40	37.74	106	100	(0.046)*
9-15	2	33.33	4	66.67	0	00.00	6	100	

χ^2 (P): Chi-Square Test & P for χ^2 Test F (P): Fisher Exact Test & P for FET-Test *: Significant at $P \leq 0.05$

References

1. A strategy for the maternity care in northern Ireland 2012-2018. HSC, Transforming Your Care - A Review of Health and Social Care in Northern Ireland, 2011. Available at: http://www.dhsspsni.gov.pdf. Retrieved on: 12 April 2014.
2. College of Nurses of Ontario. Practice Standard: Medication, Revised 2008. Available at: http://www.cno.org/Global/docs/prac/41007_Medication.pdf. Retrieved on: 14 January 2013.
3. Simpson k. Oxytocin as a High-Alert Medication: Implications for Perinatal Patient Safety. MCN, the American Journal of Maternal/Child Nursing.2009; 1(34)8-15.
4. World Alliance for patient safety. WHO Draft Guidelines for Adverse Event Reporting and Learning Systems. Available at: http://www.who.int/patientsafety/events/05/Reporting_Guidelines.pdf. Retrieved on: 3 March 2013.
5. Rouse M. Definition of compliance Available at: http://searchdatamanagement.techtarget.com/definition/compliance. Retrieved on: 2 March 2013.
6. A Bord Altranais. Guidance to nurses and midwives on medication management. July 2007. Available at: http://www.nursingboard.ie/en/policies-guidelines.aspx. Retrieved on: 10 October 2012.
7. An Bord Altranais. Medication Management. Available at: http://www.nursingboard.ie/en/medication_management.aspx#faq11. Retrieved on: 3 March 2012.
8. Pharmacy practice news. Medication Safety and Quality. Available at: http://www.auspharmacist.net.au/images/25185-Report.pdf. Retrieved on: 3 March 2013.
9. Eby A. Factors affecting medical-surgical area nurses' compliance with contact precautions. Master degree. 2009. Available at: http://scholarworks.montana.edu/xmlui/bitstream/handle/1/1217/EbyA1209.pdf. Retrieved on: 5 March 2012.
10. Freeman R & Nageotte M. A protocol for use of Oxytocin. American Journal of Obstetrics & Gynecology. 2007; 5(197): 445-6.
11. WHO. Nursing Essential Antenatal, Perinatal and Postpartum Care. 2002. Available at: http://www.euro.who.int/data/assets/pdf.file/0013/131521/E79235.pdf. Retrieved on: 2 March 2013.
12. Fraser M, Cooper A. Myles textbook of midwives. 14thed. Philadelphia: Elsevier Publication; 2009.
13. Sinclair D. Exploring the risk associated with induction of labour. Journal of Advanced Nursing. 2010; 31:410-7.
14. Kirb R. Trends in labour induction in U.S. British Medical Journal 2008; 31:148-54.
15. Sanchez L. Induction of labour. Obstetrics and Gynaecology Clinics of North America 2009; 32(2):181-200.
16. Deepak N et al. Knowledge, Attitudes, and Practices Related to Uterotonic Drugs during Childbirth in Karnataka, India: A Qualitative Research Study.2011. Available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0062801. Retrieved on: 17 June 2014.
17. Nurdan D et al. Role of doctors and midwives nurse in Oxytocin

administration. Perinatal Journal. 2005. Sept; 13(3):129-37.

18. Sathyalatha R. A study to assess present knowledge of staff nurses on oxytocin induction to mother during 1st stage of labour in view of developing a protocol for better management in maternity wards at selected hospitals, Chennai. Unpublished Master of Nursing Thesis; 2001.

19. Walker D et al. An economic Analysis of midwifery training programmers in south Kalimantan, Indonesia .Bulletin of the World Health Organization 2002,80(1): pp.47-50.

20. Dhanya P. A study to assess the knowledge of staff nurses on Oxytocin induction to mother during first stage of labor in a view to develop a protocol at selected hospitals in Bangalore, Karnatake.2010. Available at: http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_20373.doc. Retrieved on: 10 December 2013.

21. Farrell M & Pattinson B. Intrapartum Care review and Guidelines. 28 December 2005.

22. Chapman L & Durham R. Maternal–Newborn Nursing. The Critical Components of Nursing Care. Philadelphia: Davis Company, 2010; 203-5.

23. Bhurtun H. Job satisfaction of nurses in Mauritius. Degree Program in Nursing. 2009. Available at: http://www.theseus.fi/bitstream/handle/10024/4851/final%20thesis.pdf?sequence=1. Retrieved on: 25 December 2013.

24. Clayworth S. The nurse's role during oxytocin administration. Maternal and Child Nursing. 2000. Mar/Apr; 25(2):80-5.