Assessment of Nurses' Knowledge Regarding Oxytocin Administration during Labor at Maternity Hospitals in Al-Kut City

تقييم معارف الممرضات المتعلقه باعطاء البيتوسين خلال المخاض في مستشفيات النسائية والتوليد في مدينة الكوت

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المستخلص :

أهداف الدراسة: تهدف الدراسة الى تقييم معارف الممرضات فيما يتعلق باعطاء البيتوسين خلال المخاض والولادة في مستشفيات النسائية وايجاد العلاقة بين معارف الممرضات ومتغيرات الدراسة (العمر، المستوى التعليمي، اوقات العمل، سنوات الخدمة،الدورات التدريبية في مجال التمريض)

المنهجية: دراسة وصفية تحليلية لعينة غير احتمالية (ملائمة) من (70) ممرضة لتقييم معارف الممرضات فيما يتعلق بإعطاء البيتوسين اجريت الدراسة في مستشفى الكوت للنسائية والاطفال ومستشفى الزهراء التعليمي في مدينة الكوت خلال الفترة من ٥ شباط الى ٢٤نيسان ٢٠١٣. استخدمت الاستبانة كأداة لجمع البيانات لتحقيق أهداف الدراسة وتتكون من ثلاثة أجزاء: تتضمن الخصائص الديموغرافية (العمر، المستوى التعليمي ، الحالة الاجتماعية ، اوقات العمل. الخصائص المهنية (سنوات الخدمة، اجازة ممارسة مهنة القبالة، ممارسة القبالة في المجتمع والدورات التدريبية في مجال التمريض، معلومات حول البيتوسين (العمل، طريقة الاعطاء ،الاثار الغير مرغوب فيها للطفل، الاثار الغير مرغوب فيها للام ،الاثار الجانبية، محاذير الاعطاء ودور الممرضة عند الاعطاء). وتم تحديد صدق المحتوى وثبات الاستمارة الاستبيانية من خلال دراسة استطلاعية واستخدام تحليل الإحصاء الوصفي والإحصاء الاستنتاجي في تحليل البيانات .

النتائج: تشير نتائج الدراسة أن اعلى نسبة (٢٤,٣%) من افراد عينة الدراسة تتراوح اعمارهن بين (٤٠-٤٤سنة) وخريجات من اعدادية التمريض وان(٣٠%) لديهن خبرة (١-٥) سنة في مجال التمريض، و(٦٢,٩%) لم تجتاز اي دورة تنشيطية. و كانت معلوماتهن كافية في بعض الفقرات وغير كافية في بعض الفقرات فيما يتعلق بإعطاء البيتوسين. وهناك علاقة معنوية بين مستوى معارف الممرضات و(وقت العمل ،تنفيذ الاوامر).

التوصيات: تنفيذ برامج تثقيفية للممرضات لزيادة معارفهن فيما يتعلق بالبيتوسين واجراء بحوث مستقبلية في هذا المجال عن طريق قائمة الرصد لتطبيق تقنية الاعطاء بشكل صحيح لمنع الوقوع بالأخطاء .

Abstract:

Objectives of the study: To assess nurses knowledge regarding oxytocin administration during labor and delivery in maternity hospitals, and to find out the relationship between nurses knowledge and studied variables (age, level of education, work times (shift) experience year, training course in nursing field).

Methodology: Descriptive analytic study was conducted on non-probability sample (convenient) of (70) nurses to assess nurse's knowledge related to oxytocin administration. The study is conducted at Al- kut Hospital for Gynecology Obstetrics and Pediatrics and Al- Zahraa Teaching Hospital during periods 5th February to 24th April 2013, A questionnaire was used as a tool of data collection to fulfill with objectives of the study and consisted of three parts, including demographic characteristics (age, level of education, social status, work times (shift), professional characteristics (experience year, license of midwifery practice, Practice midwifery in community, In service education, Number training course in nursing field) and nurse's knowledge related to oxytocin: (Action, Administration of oxytocin , Adverse effect of oxytocin on mother, Adverse effect of oxytocin on fetus, Side effects, Contraindication and nurse's role in oxytocin administration. Content validity and reliability of the questionnaire were determined through a panel of experts and pilot study. Descriptive and inferential statistics are used to analyze the data.

Results: The results of the study showed that highest percentage (24.3%) were in age group (40-44) years, nursing secondary school graduated, and (30%) of them had (1-5) years of experience in nursing, and (62.9%) was not pass in service education. Their knowledge was adequate in some items and inadequate in certain items. Regarding oxytocin administration, there were statistical significant association between level of knowledge and (work time (shift), implementation of orders

Recommendations: Implementation of educational program for nurses about oxytocin administration to increase their knowledge, further research in this field by using checklist to apply administration technique in right method to prevent error occurrence.

Key words: Assessment, Nurse, knowledge, Oxytocin and labor.

Introduction:

Oxytocin is one of the most common used drugs in obstetric practice but it is also the drug associated with the most preventable adverse events in child birth [1] .The goal of labor induction is to stimulate uterine contractions before the spontaneous onset of labor, resulting in vaginal delivery [2].Oxytocin and prostaglandins, such as misoprostol, are used for the induction of labor [3].

Oxytocin is the most commonly used induction agent worldwide, and is utilized to stimulate or augment labor in 50% of all births in the united states[4], furthermore, one of the leading causes of obstetrical liability claims involves the administration of oxytocin leading to tacky systole [5]. The physiology of oxytocin-stimulated labor is similar to that of spontaneous labor, although individual patients vary in sensitivity and response to oxytocin. Approximately 40 minutes is required for any particular dose of oxytocin to reach a "steady-state" and the maximal uterine contractile response [6]. Important predictors of required oxytocin dosage included cervical dilatation, parity, and gestational age. Maternal body surface area was found to be associated with a higher oxytocin dosage in women undergoing induction of labor[7] .Healthcare providers have become accustomed to routinely administering this potent medication to pregnant women, most of whom would labor and deliver independently without the risks associated with the administration of oxytocin if allowed to do so [8]. Oxytocin was found to be effective in preventing and controlling postpartum hemorrhage in the third stage of labor [9]. Nevertheless, oxytocin remains the drug most commonly associated with preventable adverse events during childbirth [10].The objectives of the present study were to assess nurses knowledge regarding oxytocin administration during labor and delivery in maternity hospitals, and to find out the relationship between nurses knowledge and studied variables (age, level of education, work times (shift) experience year, training course in nursing field).

Methodology:

Descriptive analytic design was conducted on non-probability sample (convenient) which consisted of (70) nurses who worked in obstetric and gynecological ward, delivery room and maternity operational room at Al- Kut hospital for gynecology, obstetrics & pediatrics and Al-Zahraa teaching hospital. Data were collected during period 5th February to 24th April 2013 through questionnaire form consisted of three parts; Demographic characteristics which include: Age, social status, Level of education, work times (shift). Previous experience in nursing practice which include: Experience /year, license of midwifery practice, practice midwifery in community, training course in nursing field) and nurse's knowledge related to oxytocin: Action , route of administration, adverse effects for fetus, adverse effects for mother, side effects, contraindication and role of nurse when oxytocin is administered.

Response option were scored for Likert scale as two (2) for know, one (1) for don't know regarding items of Nurses' knowledge of study sample about (oxytocin) administration. So the cut–off point =1.5. To evaluate validity of the questionnaire the researchers presented it to (17) experts in various fields .Pilot study was carried out between 17th - 29th Jan., 2013, (10) nurses who work at obstetric department to determine the reliability of questionnaire.

Determination of reliability of the scale was based upon the internal consistency of the questionnaire which assessed by calculating split-half method R= 0.951. Data were analyzed through the use of (Statistical package). Through the application of descriptive statistical data analysis include

(Frequencies, Percentage, Mean, Standard Deviation and mean of score) and inferential statistical data analysis include Pearson correlation and Chi-Square test for testing the different among several observed frequencies and their expected.

The criteria of probability levels were used to determine the significance of the statistical test as following: Highly Significance (P < 0.01), Significant (P < 0.05) and Non-Significant (P ≥ 0.0). The level of knowledge is measured as Accepted and unaccepted. Two point of Likert scale used for rating the level of knowledge and it's measured as (2) for "Accepted" and (1) for "Unaccepted". The cut-off point was 1.5. So the level of knowledge was calculated according to the following formula: Number of items × cut-off point). Level of knowledge = 18* 1.5 = 27. Accepted value: ≥ 27. Unaccepted value: < 27.

Results:

Table 1. Distribution of Socio Demographic Characteristics of the Study Sample (n= 70).

Demographic variable	No.	%
Age (years)		
20-24	**13**	**18.6**
25-29	**9**	**12.9**
30-34	**11**	**15.7**
35-39	**13**	**18.6**
40-44	**17**	**24.3**
45-49	**1**	**1.4**
50≥	**6**	**8.6**
$\bar{X}$ ± SD 34.80 ±9.28		
Level of education		
Nursing school graduated	**24**	**34.3**
Nursing secondary school graduated	**29**	**41.4**
Midwifery secondary school graduated	**11**	**15.7**
Nursing institute	**6**	**8.6**
Social status		
Married	**46**	**65.7**
Single	**17**	**24.3**
Widow	**2**	**2.9**
Divorced	**5**	**7.1**
Work times (shift)		
Day	**40**	**57.1**
Evening	**18**	**25.7**
Nightly	**7**	**10.0**
Day , evening and night	**5**	**7.1**

No. = Number; % = percentage; $\bar{X}$ = mean; SD. = Standard Deviation

The findings of this table presented that (24.3%) of the study samples were at age (40-44) years, 41.4 % of them were secondary school graduate, 65.7% were married, but (57.1%) of them there work times at day shift.

Table 2. Previous Experience of Study Sample in Nursing Practice

Previous experience of study sample in nursing practice	No.	%
Experience / year		
Less than 1 year	12	17.1
1-5	21	30
6-10	10	14.3
11-15	7	10.0
16 and more	20	28.6
$\bar{X}$ ± SD 3.03 ± 1.50		
license of midwifery practice		
Yes	31	44.3
No	39	55.7
Practice midwifery in community		
Yes	29	41.4
No	41	58.6
In service education		
Yes	26	37.1
No	44	62.9
Number of training course in nursing field		
1-5	16	61.53
6-10	6	23.07
11and more	4	15.4

No. = Number; % = percentage; $\bar{X}$ = mean; SD. = Standard Deviation.

The findings of this table presented that(30.0%) of the study samples their experience (1-5) years with $\bar{X}$ ± SD = 3.03 ± 1.50 , 44.3% of study sample had license in midwifery practice, while 55.7% had not, (58.6 %) of study sample not practice midwifery outside hospitals, regarding+ in service education (62.9%) had no training course, while (37.1%) had course. The highest percentage (61.53%) of training course number was between (1-5) courses in nursing field.

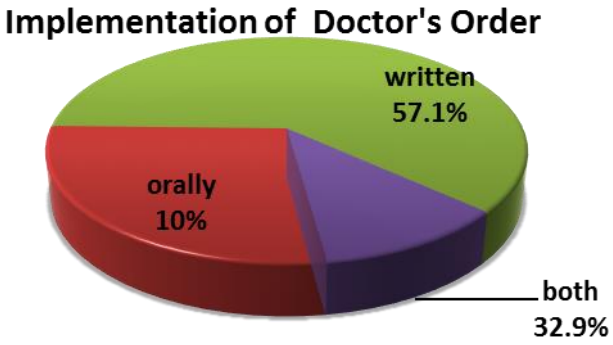

Figure 1. Implementation of Doctor's Order to Administration of Medication

Figure (1) show that the highest percentage (57.1%) of study sample refers to: implement doctor order by written, (10%) of study sample refers to implement doctor order orally, while (32.9%) of them implement order by both (written and orally)

Table 3. Nurses' Knowledge of Study Sample about Oxytocin Administration (n=70)

List	Knowledge items	Know		Don't know		Mean of Score
		No.	%	No.	%	
Oxytocin (Pitocin)						
1.	Action of Oxytocin					
1.1.	Use for induction of uterine contractions	59	84.3	11	15.71	1.84
1.2.	work immediately after giving I.V.	35	50.0	35	50.00	1.5
1.3.	work through(3-5) minutes when given I.M.	21	30.0	49	70.00	1.3
2.	Administration of Oxytocin					
2.1.	Directly in vein	35	50.0	35	50.00	1.5
2.2.	By I.M	21	30.0	49	70.00	1.3
2.3.	Diluted by intravenous fluids	63	90.0	7	10.00	1.9
2.4.	Given in the case of control bleeding after childbirth	65	92.9	5	7.14	1.93
3.	Adverse effect of Oxytocin on mother					
3.1.	Nausea and vomiting	47	67.1	23	32.86	1.67
3.2.	Postpartum hemorrhage	37	52.9	33	47.14	1.53
3.3.	Tachycardia	42	60.0	28	40.00	1.6
4.	Adverse effect of Oxytocin on fetus					
4.1.	Brain damage	25	35.7	45	64.29	1.36
4.2.	Bradycardia	39	55.7	31	44.29	1.56
4.3.	Fetal death	40	57.1	30	42.86	1.57
4.4.	Neonatal jaundice	29	41.4	41	58.57	1.41
5.	Side effects					
5.1.	Hypertension or hypotension	38	54.3	32	45.71	1.54
5.2.	Heart palpitations	43	61.4	27	38.57	1.61
5.3.	Irregular heartbeat	39	55.7	31	44.29	1.56
5.4.	Heart attack	23	32.9	47	67.1	1.33
5.5.	Epilepsy	22	31.4	48	68.57	1.31
5.6.	Uterine rupture	51	72.9	19	27.14	1.73
6.	Contraindication					
6.1.	Fetal distress	43	61.4	27	38.57	1.61
6.2.	Cephalopelvic Disproportion	40	57.1	30	42.86	1.57
6.3.	Abnormal fetal presentation	43	61.4	27	38.57	1.61
6.4.	Placenta previa	42	60.0	28	40.00	1.6
6.5.	Umbilical cord prolapsed	40	57.1	30	42.86	1.57
6.6.	Cesarean section	46	65.7	24	34.29	1.66
7.	Nurse's role in Oxytocin administration					
7.1.	Ensure of the patients' name	65	92.9	5	7.14	1.93
7.2.	Ensure of the number of units prescribed	65	92.9	5	7.14	1.93
7.3.	Make sure f the type and quantity of t appropriate fluid put it.	65	92.9	5	7.14	1.93
7.4.	Spotting on a bottle liquid where Oxytocin placed	64	91.4	6	8.57	1.91
7.5.	Re-calculate drops from time to time	57	81.4	13	18.57	1.81
7.6.	Monitoring uterine contractions in case of frequency and intensity	59	84.3	11	15.71	1.84
Grand mean score =1.66						

No. =Number; % = percent.

The results of this table revealed that there were high mean score in items (2.) Administration of oxytocin in item No.(2.4.)Given in the case of control bleeding after childbirth, 7.Nurse's role in Oxytocin administration in item No (7.1.) Ensure of the patients' name, item No. (7.2). Ensure of the number of units prescribed, and item No. (7.3) make sure of the type and quantity of t appropriate fluid to put it). Except in item related to (1) Action of oxytocin in item No.(1.3) work through(3-5) minutes when given I.M. (2.) Administration of Oxytocin in item No.(2.2.) By I.M) shows low mean scores.

Table 4. Association between Nurse's Knowledge Regarding Oxytocin Administration

Studied Variables		Level of Knowledge (n=70)				χ^2	df	P-value	Sig.
		Accepted		Unaccepted					
		No.	%	No.	%				
Age/ years	≤ 30	8	11.43	18	25.71	4.544	2	.103	Ns .
	31-40	6	8.57	21	30.0				
	41 & above	9	12.86	8	11.43				
Level of Education	Secondary and lower	19	27.14	34	48.57	1.290	2	.525	Ns.
	Midwifery	2	2.86	9	12.86				
	Institute & College	2	2.86	4	5.71				
Experience/ year	1year ≥	5	7.14	14	20.00	6.749	3	.080	Ns .
	2-6	2	2.86	12	17.14				
	7-11	2	2.86	7	10.00				
	12 ≥	14	20.00	14	20.00				
Work times (shift)	Day	22	31.43	18	25.71	6.994	2	.030	S .
	Nightly	5	7.14	20	28.6				
	Both	0	0.00	5	7.14				
Implementation of doctor order	Orally	5	7.14	3	4.29	9.783	3	.021	S .
	Written	16	22.86	24	34.3				
	Both	2	2.86	20	28.6				
Training course in nursing field	1-5	7	26.92	13	50.00	3.608	2	.165	Ns.
	6-10	1	3.85	3	11.54				
	11& more	2	7.69	0	0.00				
In service education	Yes	11	15.71	15	21.43	1.675	1	.169	Ns .
	No	12	17.14	32	45.71				

No. =Number; % = percent, ≤= Less than or Equal, ≥= More than or Equal, χ2 = Chi –square; df= Degree of freedom; P-value =Probability level value; sig = level of Significance

This table indicates that there were statistical significant association between level of knowledge and (Work times (shift),Implementation of doctor order).while there were no statistical significant association between level of knowledge and (Age/ years, Level of Education, Experience/ year, Training course in nursing field, In service education).

Discussion:

The present study reported that the highest percentage (24.3%) of study sample is at age group between (40-44) years old with Mean and SD (34.80± 9.28) table (1). The present study reveals that there are no statistical significant association between age and level of knowledge.

The findings of present study supported evidence is available in the study that reported the majority (50 %) of the respondents were between the ages of 31 and 40 years, the findings suggest that the Pretoria west hospital maternity unit nursing staff constitute mainly adults in their thirties.(11) Regarding level of education the highest percentage (41.4%) of study sample were graduated from secondary nursing school, while (8.6 %) were graduated from Nursing institute .

The majority of study sample were married, while (2.9%) were widow table (1). The present study reveals that there are no statistical significant association between level of education and level of knowledge. The present study supported evidence is available in the study that reported the majority of the respondents were married and (2.94%) were widow as shown in table 1. The highest percentage (30 %) of study sample had experience years in nursing between (1-5) years, while lower percentage was (10. %) their experience year in nursing between (11-15) years. The present study reveals that there are no statistical significant association between experience/ year and level of knowledge. This results supported evidence is available in the study that reported (42.43%) of the respondents worked at Pretoria west hospital for a period between (0 and 5) years(11).

Regarding License in midwifery practice. The present study reported that the highest percentage (55.7%) of study sample had not license of midwifery practice, while (43.3%) had license. More than half of study sample not practice midwifery in community, while (41.4%) of study sample was practiced it.

It was reported that licenses of midwives must be renewed annually after passing training course for one month (two weeks in the hospital and two weeks in primary health care centers (12).

(62.9%) of study sample didn't had any training course while, (37.1%) had training course in nursing field. Related to number of attending the training course the study reported that (61.53 %) had attended between (1-5) course, (23.07%) had attend between (6-10) course, (15.4%) had (11_15) course in nursing field.

Regarding implementation of doctor's order: The present study reported that the highest percentage (57.1%) of study sample implement doctor order by written, (10%) of study sample was implement doctor order orally, while (32.9%) of them implement order by both written and orally figure (1). This means that more than half of study sample implement order in the correct way, while nearly one third of study sample did not implement order in the correct way. The present study reveals that there is a statistical significant association between implementation of order and level of knowledge. The present study also reported that there are statistical significant association between training course in nursing field and level of knowledge.

The finding of present study supported evidence is available in the study that explains employees who are not given the chance to improve their knowledge and skills, feel frustrated when faced with new situations that affect their jobs, because they do not have up to date knowledge to intervene in order to meet patients' need (13). Regarding work times (shift): More than half of study sample their work time was in morning while lowest

percentage (7.1%) their work time was in morning, evening, and night (table2). The present study reveals that there was statistical significant association between work times (shift) and level of knowledge.

The finding of present study supported evidence is available in the study that reported the highest percentage (55.8%) of study sample work in the morning shift while (40.4%) of them working in morning and evening shift and only (3.8%) working in the evening shift [14]. Regarding implementation of order: The present study reported that there were statistical significant association between implementation of order and level of knowledge. According to results indicate that (22.86%) of study sample was implement written order.

Also the results regarding the nurses knowledge of the study revealed that the grand mean score was 1.66 of study and some items had high mean score above or equal cut-off point in the following items related to item (1): Action of oxytocin which include: work and induction of uterine contractions, work immediately after giving I.V. item (2): Oxytocin administration which include: Directly in vein, diluted by intravenous fluid, given in the case of control bleeding after child birth. Item (3): Adverse effect of oxytocin (mother) which include: Nausea and vomiting, postpartum hemorrhage, Tachycardia. Item (4): Adverse effect of oxytocin (fetus) which include: Brady cardia, fetal death. Item (5): Side effects which include: Hypertension or hypotension, heart palpitations, Irregular heartbeat, uterine rupture. Item (6): Contraindication of oxytocin administration which include: Fetal distress, cephalopelvic disproportion, abnormal fetal presentation, And placenta previa, umbilical cord prolapsed, cesarean section. Item (7): Role of nurse When treat oxytocin which include: Ensure of the patients' name, ensure of the number of units prescribed, make sure of the type and quantity of the appropriate fluid to put it, tick on a bottle liquid where pitocin placed, re-calculate drops from time to time, monitoring uterine contractions in case of frequency and intensity, monitor the baby's heartbeat, stopping the leaking of fluid in case a strong abnormal contractions, in case of weak uterine contraction increase the speed of I.V. infusion. So the result indicated that the study sample doing her role as requirable when treat Pitocin (Table 3).

The finding of present study supported evidence is available in the study stated that there were a number of case reports describing uterine rupture with the use of oxytocin in the multigravida patient [1]. The guidelines provided by NICE and by WHO are alike in requiring oxytocin to be administered by IV infusion and continuous monitoring of contractions and fetus heart rate [15][16]. The WHO practical guide from 1996, for instance, explicitly warned against the intramuscular administration of oxytocin because it is harmful for the fetus and increase the risk of uterine rupture [17]. It was reported that nurses at the bedside of laboring women who make oxytocin titration decisions based on their nursing assessments. Those decisions must be based on a sound knowledge of the pharmacologic properties of oxytocin, the physiology of uterine contractions, and the response of the woman and fetus to contractions. In addition, nurses must be aware of the standards and guidelines of care that govern their actions during induction/augmentation [18].

While there were items had low mean score in the following items related to item (1): Action of oxytocin in (work through (3-5) minutes when given I.M. item (2): Oxytocin administration in (By I.M). item (3): Adverse effect of oxytocin (fetus) in (Brain damage, and Neonatal jaundice). Item (5): Side effects in (Heart attack, and Epilepsy)

The finding of present study supported evidence is available in the study reported that

there were no significant effect of oxytocin infusion was revealed on neonatal hyperbilirubinemia unless oxytocin was for the augmentation of labor [19].

The finding of present study supported evidence is available in the study stated that the most striking potentially preventable risk factor for adverse outcome was induction of delivery using oxytocin infusion [20].

Recommendations:

The study recommends that Implementation of educational program for nurses about oxytocin administration in order to improve their level of knowledge in order to protect safety for mother and her fetus and encourage nurse to gain up more progress in her work. Further research in this field by using check list to apply administration technique in right manner to prevent error occurrence and apply documentation in order to find out misuse of drug and try to find solution to it.

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