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Nurses knowledge and practice regarding oxytocin administration during first stage labor in maternity ward of teaching hospital

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Abstract

Introduction: Oxytocin is commonly used for induction of labor. The objective of the study was to assess the knowledge and practice regarding oxytocin administration during the first stage of labor in maternity ward.

Method: A descriptive cross-sectional study was conducted among nurses of maternity ward of Patan Hospital, Nepal. Data was collected by using self-administered structured questionnaire for the knowledge assessment. Observation checklist was used to record the practice. Descriptive and inferential data analysis was done by SPSS version 16. The association and correlation between variables were measured by chi-square and Pearson correlation coefficient respectively.

Result: Out of 31 nurse participants, majority (87.1%) had good knowledge and showed moderately good practice (in 70%) regarding oxytocin administration. The correlation between knowledge and practice on use of oxytocin among the staff nurses had positive relationship ($r=0.051$).

Conclusion: Majority of nurses had good level of knowledge and moderate level of practice on use of oxytocin.

Keywords: augmentation, contraction, induction, nurses, oxytocin

Introduction

Oxytocin is a commonly used drug in obstetric practice.¹ The goal of labor induction is to stimulate uterine contractions.² Oxytocin and prostaglandins are used for the induction of labor.³ The oxytocin is a synthetic hormone, a high-alert medication harmful if used incorrectly.⁴

Duration of labor was reduced by 72% (from 90 to 25 min).⁵ Study shows, staff nurses had below average (47.7%) knowledge and poor level of practice (45%) on use of oxytocin.⁶ Among 60 nurses, 63.3% had inadequate knowledge and 36.7% moderate knowledge on outcome of oxytocin induction of labor.⁷

Oxytocin is an emergency drug listed in essential drug list in Nepal. It was used in 82.4% for deliveries, in 31.9% for augmentation of labor and only 27.45% for induction.⁸

Nurses at the bedside of laboring women who make oxytocin titration decisions must be aware of the standards and guidelines of care and actions during induction/augmentation.⁹

This helps to reduce neonatal and maternal mortality and morbidity. This study aims to identify nurse's knowledge and practice regarding oxytocin administration during 1st stage of labour in a maternity ward of a tertiary care teaching hospital.

Method

A cross-sectional design was conducted to identify nurses' knowledge and practice regarding oxytocin administration during 1st stage of labour of maternity of Patan Hospital, Patan Academy of Health Sciences (PAHS), Lalitpur, Kathmandu, Nepal, from April 2018 to February 2019. Total enumerative sample was used for sample selection. The total sample size was 35 nursing staffs of maternity ward. Data was collected from 31 nursing staff available during the data collection period. Two staffs were on maternity leave

and two had resigned from the job. Knowledge level was collected from 31 nurses and practice level from 30 nurses. The practice of oxytocin administration of nurse in-charge could not be observed as she did not perform during data collection period. Sample size was calculated by using Cochran's formula. A structured self-administered questionnaire and observational checklist was used.

The instrument consists of following parts: Part I, Questions related to demographic information (age, education, total experience in nursing, experience in maternity, training on labor management). Part II, questionnaires related to knowledge on oxytocin administration. Part III, contained observation checklist related to practice on oxytocin administration. A score of 75% was considered a good level of knowledge and practice, 50- 75% a moderately level and <50% a poor level.

For the content validity, researcher, supervisor, subject experts, and research teacher were consulted. Pretesting to check the clarity, feasibility, accuracy and sequence of the instrument of knowledge related questionnaire was conducted among 5 nurses in post-partum ward of Patan hospital. Some modification was done as required. Nurses were informed that their practice will be observed at any time and at any shift without their awareness. Data was collected over 4 weeks' period, every day from 6 am to 3 pm except on Saturday. Practice was assessed by using structured observation checklist to assess practice of administration of oxytocin. Researcher herself observed the practice in the morning and evening shift based on the duty roster for covering all the staffs. In each shift, there are three nurses in the labor room. So, 1-2 nurses were observed each day. Then a code number was given to that observed checklist. Same code number was given to the self-administered questionnaire prepared for knowledge assessment. After that, questionnaire was distributed to that respondent whose practice has already been observed by the researcher. For this

questionnaire was distributed at the start of the shift and collected at the end of shift. Ethical approval was taken Institutional Review Committee of (IRC) of PAHS. Consent was obtained from respondents and objectives explained before collection of data.

Data were analyzed by SPSS 16. Descriptive statistical methods in terms of frequency, percentage, mean and standard deviation and inferential statistics Fisher Exact test and Pearson correlation were used.

Result

A total of 31 nurses working in maternity ward participated in the study, majority 20 (64.5%) belonged to age group 21-30 years, nearly half of them 15 (48.4%) had completed

post basic nursing (PBN) and 11 (35.5%) had work experience between 4-8 years, Table 1. Most of the 27 (87.1%) respondents had good knowledge regarding oxytocin administration, with an average score of 25.58(SD2.75), Table 2. Most of the 21 (70%) respondents had moderate practice level, average score 8.06(SD1.22), Table 2.

Selected demographics, like age, educational status, work experience had no significant association with knowledge level, Table 3. Selected demographics, like age, educational status, work experience had no significant association with practice level, Table 4.

The correlation between knowledge and practice was 0.051 which is positive relationship between knowledge and practice, Table 5.

Table 1. Sociodemographic of nurse participants (N=31) from a maternity ward in knowledge and practice regarding oxytocin administration during first stage labor

Variables	Frequency	Percent
Age (in years)		
21-30	20	64.5
31-40	9	29
41-50	2	6.5
Educational Status		
PCL nursing	12	38.7
BSc Nursing	4	12.9
P.B.N	15	48.4
Work Experience(in years)		
≤4	8	25.8
5-8	11	35.5
9-12	8	25.8
>12	4	12.9
Mean± SD=8.55±6.30		
Experience in Maternity Ward (in years)		
≤4	15	48.4
5-8	10	32.3
9-12	5	16.1
>12	1	3.2
Mean ± SD=5.65± 5.14		
SBA Training		
No	29	93.5
Yes	2	6.5

Table 2. Overall level of knowledge and practice regarding oxytocin administration of nurse participants (N=31) from a maternity ward in during first stage of labor

Item	Number	Percent
Level of Knowledge (Mean ± SD : 25.58 ± 2.75)		
Poor (<50 %)	0	0
Moderate (50-75 %)	4	12.9
Good (>75 %)	27	87.1
Level of Practice (Mean ± SD : 8.06 ± 1.22)		
Poor (<50 %)	9	30
Moderate (50-75 %)	21	70
Good (>75 %)	0	0

Table 3. Association of age and experience of nurses (N=31) with level of knowledge regarding oxytocin administration from a maternity ward in during first stage of labor

Variables	Level of Knowledge			p-value
	Poor	Moderate	Good	
Age				
21-30	-	4(20%)	16(80%)	8.070
Above 31	-	4(36.36%)	7(63.64%)	
Experience in Nursing work				
≤8 years	-	4(21.05%)	15(78.95%)	11.101
>8 years	-	4(33.33%)	8(66.67%)	
Experience in Maternity Ward				
≤8 years	-	4(6.7%)	21(93.3%)	18.170
>8 years	-	2(33.3%)	4(66.6%)	

Note: Fisher Exact Test

Table 4. Association (Fisher exact test) of age and experience of nurses (N=30) with level of practice of oxytocin administration in a maternity ward in during first stage of labor

Variables	Level of Practice			p-value
	Poor Practice	Moderate Practice	Good Practice	
Age				
21-30	5(25%)	15(75%)	-	3.329
Above 31	4(40%)	6(60%)	-	
Educational Status				
PCL	4(33.4%)	8(66.6%)	-	2.990
Bachelor's	5(27.8%)	13(72.2%)	-	
Experience in Nursing work				
≤8 years	4(21.05%)	15(78.95%)	-	4.304
>8 years	5(45.5%)	6(54.5%)	-	
Experience in Maternity Ward				
≤8 years	5(22.73%)	17(77.27%)	-	9.724
>8 years	4(50%)	4(50%)	-	

Table 5. Significant correlation (at the 0.05 level, 2-tailed) between knowledge and practice of nurses (N=30) on oxytocin administration in a maternity ward in during first stage of labor

Variables	Correlations	Knowledge Level	Practice Level
Knowledge	Correlation Coefficient	1.000	0.051
	Sig. (2-tailed)		0.790
Practice Level	Correlation Coefficient	0.051	1.000
	Sig. (2-tailed)	0.790	

Discussion

The study shows that most of the respondents had good knowledge (87.1%), some had moderate knowledge (12.9%), and none had poor knowledge regarding oxytocin administration. On the contrary, the study done by Shiny showed that 46.7% of the staff nurses had below average level of knowledge, 35% had average level of knowledge and 18.3% above average level of knowledge on use of oxytocin.⁶

This study found that most (70%) of the respondents had moderate level of practice, 30% of poor practice, but none had good practice regarding oxytocin administration. The study done by Shiny showed that 45% of the staff nurses had poor level of practice, 32.5% of the staff nurses had moderate level of practice and 22.5% of the staff nurses had good level of practice on use of oxytocin.⁶

The present study revealed there was no significant association between demographic variables like age, work experience in maternity ward and knowledge on use of oxytocin.

Similar finding is reported in other studies with no statistically significance between age, level of education and work with knowledge.¹⁰ But a study from Chennai, India showed statistically significant association between level of knowledge on use of oxytocin among nurses with educational status, total working experience, experience in maternity unit.⁶

Regarding practice of oxytocin administration, present study found no association between demographic variables, age, total working experience, and experience in maternity ward. On the contrary, study conducted in Chennai, India, found statistically significant association between level practice on use of oxytocin among staff nurses with their age, educational status, total working experience, experience in maternity unit, and in-service education.⁶

This study shows positive correlation ($r=0.051$) between knowledge and practice, similar to other studies.¹⁰

Some of the limitation of this study include single center study, at a major teaching hospital and may not be generalized in other settings. Prior knowledge of study and presence of researcher may have influenced practice.

Conclusion

The study found more than two third of the nurses had good knowledge on oxytocin administration, and there was no significant association between age and work experience with level of knowledge and practice on oxytocin administration. There was positive co-relation between knowledge and practice.

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Conflict of Interest

None

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Supplement (questionnaire)

**Patan Academy of Health Sciences
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Research Instrument

After getting verbal and written informed consent from the respondents, the respondents require to answer the questions one by one by putting the tick mark (✓) on correct response.

Date.....

Name of Hospital...Patan Hospital

Topic: Nurses Knowledge and practice regarding oxytocin administration during first stage labor in maternity ward of a teaching hospital.

Objectives: To assess the knowledge and practice regarding oxytocin administration during first stage among nurses working in maternity ward.

Direction: Please (✓) the correct answer

PART – I

Proforma

1. Age of staff nurses

- (a) 21-30 years
- (b) 31-40 year
- (c) 41-50 years
- (d) >50 years

2. Educational status

- (a) PCL Nursing
- (b) B.Sc. NURSING
- (c) P.B.N.

3. Total experience in nursing work

- (a) < 4 years
- (b) 4-8 years
- (c) 8-12 years
- (d) >12 years

4. How many years of experience do you have in maternity ward?

- (a) < 4year
- (b) 4-8 years
- (c) 8-12 years
- (d) >12 years

5. Have you taken any training on labour management?

- a) Yes
- b) No

If yes, what training and duration of the training

- (a)
- (b)
- (c)

PART-II Question related to knowledge of oxytocin drug

1. Oxytocin is secreted by which gland?

- (a) Pituitary gland
- (b) Adrenal glands
- (c) Thyroid gland
- (d) Hypothalamus

2. What are the action of oxytocin?

- a) Stimulate decidual prostaglandin production
- (b) Initiate the contraction of uterus
- (c) Mobilizes intracellular calcium
- (d) Activate the contractile protein

3. What is the appropriate duration of action of Oxytocin?

- (a) 10 minutes
- (b) 15 minutes
- (c) 20 minutes
- (d) 25 minutes

4. What are the indications of oxytocin before delivery? Yes/No Question

Yes

No

- a) Failed instrumental delivery
- (b) Augmentation of labour.
- (c) Induction of labour
- d) Control postpartum hemorrhage

5. Which are the contraindications of oxytocin before delivery.

Yes

No

- (a) Cephalopelvic disproportion
- (b) Grand multipara
- (c) Foetal distress
- (d) Malpresentation

6. What are the side effects of oxytocin on mother? Multiple response questions.

- (a) Nausea
- (b) Water intoxication
- (c) Hypotension
- (d) Stomach pain

7. How frequently do the vitals of the mother need to be monitored while on oxytocin?

- (a) Hourly
- (b) ½ Hourly
- (c) 2 Hourly
- (d) 3 Hourly

8). How frequently does the fetal heart sound need to be monitored of mother while on oxytocin drip?

- (a) 15 minutes interval
- (b) 30 minutes interval
- (c) 60 minutes interval
- (d) 90 minutes interval

9. What do you do if fetal distress occurs? Multiple response questions.

- (a) Stop oxytocin
- (b) Inform the doctor
- (c) Administer oxygen
- (d) Keep mother in left lateral position

10. Is it necessary to do vaginal examination for labour progress?

- (a) Yes
- (b) No

11. When do you assess fetal heart sound and uterine contraction in mother with oxytocin infusion?

- (a) Only before each increase in oxytocin rate.
- (b) Only after each increase in oxytocin rate
- (c) As doctor's order
- (d) Before and after each increase in oxytocin rate.

12. At what duration will you increased the oxytocin drip?

- (a) ½ Hourly
- (b) 1Hourly
- (c) 1½ Hourly
- (d) 2 Hourly

13. During oxytocin infusion what parameters of the mother do you monitor the mother?

- (a) Blood pressure and FHS
- (b) Blood pressure, pulse, respiration and FHS
- (c) Respiration and pulse
- (d) Blood pressure and respiration

14. How will you assess the duration of the uterine contraction?

- (a) Palpating the uterus.
- (b) Time interval from beginning of the contraction to the end of the contraction
- (c) Palpating at the midway between fundal and umbilical region
- (d) Palpating anywhere on the abdomen

15. While administering oxytocin, nurses has to: (Multiple responses)

- (a) Follow doctor's judicious order
- (b) Prepare intravenous fluid
- (c) Assess finding of vaginal examination
- (d) Assess uterine contraction

PART-III Observational checklist for oxytocin administration

Observational checklist will be used to observe the practice of staff nurses on oxytocin administration.

S.N.	ITEMS FOR OBSERVATION	YES	NO	REMARKS
	Assessment before oxytocin administration			
1	Confirm the doctor's order before oxytocin administration			
2	Follow five rights			
3	Assess for the uterine contraction			
4	Assess finding of vaginal examination			
5	Check fetal heart sound			
6	Check vital signs			

	Assessment during administration of oxytocin			
7	The mother shouldn't left alone when the oxytocin infusion is running.			
8	Always start the drop with 10 drops/min and increase 10 drops in every 30 minutes.			
9	Rate of flow of the infusion should be observed and properly adjusted when the drop is regulated by counting the drops per minutes.			
10	Keenly observed the response of uterine contraction by abdominal palpation.			
11	Fetal heart rate should be noted every 15 minutes interval.			
12	Fetal heart sound should heard one full minutes			
13	Use partograph to assess progress of labour.			
14	Maternal condition should assess frequently by checking pulse, blood pressure hourly, urine should be recorded.			
15	Progress of labour should be assessing by abdominal and vaginal examination.			
16	Maintain proper record and report			