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ORIGINAL RESEARCH ARTICLE

NURSES' KNOWLEDGE AND PRACTICE REGARDING INTRAVENOUS THERAPY IN A TEACHING HOSPITAL, BHARATPUR

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ABSTRACT

Background: Intravenous (IV) therapy is a common procedure in clinical setting of any hospital and nurses are accountable for handling and management to the patient with IV therapy. However, various serious medical complications were arisen due to nurses having inadequate knowledge and practice on IV therapy. Therefore, this study was conducted to find out the nurses' knowledge and practice regarding IV therapy in a teaching hospital, Bharatpur, Chitwan.

Methods: A cross- sectional study design was adopted with 177 nurses for assessment to knowledge and 53 nurses to observe practice on IV therapy. A systematic random sampling technique was used. Data were collected by using semi-structured, self-administered questionnaire for identifying knowledge and observation checklist for observing the practice of IV therapy among nurses. The data was analyzed using descriptive and inferential statistic.

Results: The level of knowledge was found inadequate and level of practice was found unsatisfactory on IV therapy. The associated factors with level of knowledge regarding IV therapy were age (p=0.012), professional qualification (p=0.001), professional designation (p=0.005), professional experience (p=0.002) and in-service education (p=0.003). Similarly, the associated factors with level of practice on IV therapy were professional qualification (p=0.020) and professional designation (p=0.04).

Conclusions: It is concluded that most of the nurses had inadequate knowledge and unsatisfactory practice on IV therapy. Hence, it is strongly recommended for need of protocol for IV therapy, in-service education, effective supervision and reinforcement for improvement of knowledge and practice regarding IV therapy among nurses.

INTRODUCTION

Intravenous therapy (IVT) is the procedure that needs manual skills, professional competency, knowledge about the anatomy and physiology of vascular system. It is used more frequently for administration of different drugs, fluids, blood, nutrition for sampling and other purposes.[1] In clinical setting of hospital, nurses are believed to be accountable and responsible for handling and managing patient with it.[2]

About 25 million people worldwide receive IV therapy by means of peripheral cannula yearly.[3-4] Fluid and electrolyte replacement through IVT is the important component for critical patient to maintain hemodynamic status. Thrombophlebitis is a common complication associated with IVT due to the infection and responsible reason for increased morbidity and mortality.[5]

Various complications related to IVT should be prevented by health worker especially nurses. To avoid these complications, the nurse needs to have competence in knowledge as well as practice of intravenous therapy. Trained nurses have adequate

knowledge of prevention of risk factors of infections and skillful to care for patient with peripheral intravenous.[6] Knowledge and practice regarding IVT among nurses is important key component to provide quality care to the patient with IVT and prevent complications related to IVT.[7]

Very few studies were addressed regarding this issue in hospital setting previously.[2,8] So, investigator was interested to conduct this study to findout the knowledge and practice regarding intravenous therapy among nursing personnel.

METHODS

This study was conducted in Chitwan Medical College Teaching Hospital (CMCTH), Bharatpur during month of October 2016 with 177 nurses who met the inclusion criteria like all the registered nurses (N=354) working at CMC-TH with at least 3 month professional experience for assessing the knowledge and among them only 30% of sample size (n=53) nurses for assessing the practice of IVT after getting approval from Institutional Review Committee (IRC-CMC) and informed consent from each respondents for this study.

A cross-sectional study design was used. Systematic random sampling technique was adopted. First of all required sample size was calculated by using n = z2pq/d2 then Kth interval was identified by dividing sample frame/population 354 by 177 (sample size) so kth value was found to be 2 then first random sample was drawn by lottery method and selected individual sample was added with kth value 2 till required sample size (n=177) was reached. The data was collected by using semi-structured (26 items) self-administered questionnaire for assessing knowledge and observational checklist (24 items) for observing practice of nurses working in different units of CMCTH like general area (ENT, Gynae, Tropical, Nephro, Ortho, Pediatric, Paying, Psychiatric, Surgical) and Critical area (CCU, ER, HDU, Hemodialysis, MICU, NEURO, NICU, OT, PICU, Post-op, SICU, Respiratory) were selected. Data was analyzed for descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (chi-square). Prior to measure association level of knowledge and practice was classified based on Mean ± SD (11±2.43) for knowledge and Mean ± SD (20±1.75) for practice regarding IVT.

RESULTS

Demographic Information of Respondents

In this study (table 1), mean age of the respondent was 22.7±2.66 and 50.3% of respondents were in the age equal and more than 23 years old, residing in urban region (91.0%), having religion as Hindu (93.8%) and with ethnicity of Brahmin/ Chhetri (77.9%), graduated from private institution (85.3%), PCL nursing qualification (81.9%), staff nurse as professional designation (84.7%), working in general ward (57.6%), less than one year experience (38.6%) and not participated in-service education on IVT (84.7%).

Table 1: Respondents' Socio-demographic Characteristics
n= 177

Variable	No.	%
Age groups (in years)		
<23	88	49.7
≥23	89	50.3
Mean± SD=22.7±2.66		
Place of residence		
Urban	159	91.0
Rural	18	9.0
Religion		
Hindu	166	93.8
Non hindu	11	6.2

Ethnicity		
Brahmin/Chhetri	138	77.9
Dalit/janjati	39	22.1
Educational institute		
Government	26	14.7
Private	151	85.3
Professional qualification		
Bachelor of nursing	17	9.6
Proficiency certificate level	145	81.9
B.sc. nursing	15	8.5
Professional designation		
Staff nurse	150	84.7
Senior staff nurse	27	15.3
Clinical area		
General *	102	57.6
Critical**	75	43.4
Professional experience		
Less than year	69	38.6
One year to less than 2 year	52	29.4
Two year or more	56	32.0
In service education on IV therapy		
Yes	27	15.3
No	150	84.7

** ENT, Gynae, Tropical, Nephro, Ortho, Pediatric, Paying, Psychiatric, Surgical*

*** CCU, ER, HDU, Hemodylis, MICU, NEURO, NICU, OT, PICU, Post-op, SICU, Respiratory.*

Respondent`s Level Knowledge and Practice regarding IV Therapy

Table 2 shows about more than half of respondents (50.9%) had inadequate knowledge regarding IV therapy whereas less than half of the respondents (49.1%) had adequate knowledge regarding IV therapy and Table 3 shows about two third of respondents (66.1%) had unsatisfactory level of IV therapy practice whereas only (33.9%) of the respondents had satisfactory in their practice in relation to IV therapy.

Table 2: Respondents' Level of Knowledge on Intravenous Therapy

Level of Knowledge	No.	%
Adequate (mean>11)	87	49.1
Inadequate (mean≤11)	90	50.9
Total	177	100.0

Mean ± SD (11±2.43); Possible scores-0-16

Table 3: Respondents' Level of Practice on Intravenous Therapy n= 177

Level of Practice	Frequency	%
Satisfactory (mean>20)	18	33.9
Unsatisfactory(mean≤20)	35	66.1
Total	53	100.0

Mean ± SD (20±1.75); possible scores-0-24

Table 4 shows that significant influencing variables of level of knowledge regarding IV therapy were age group (P=0.012), professional qualification (P=0.001), professional designation (P= 0.005), professional experience (P=0.001) and in-service education training (P=0.033) Whereas Table 5 shows that significant influencing variables of level of practice regarding IV therapy were professional qualification (P=0.020), and professional designation (P=0.043).

Table 4: Association between Respondents Level of Knowledge regarding IV Therapy and Selected Variables (n= 177)

Variables	Level of Knowledge		χ 2	p-value
	Adequate	Inadequate		
Age Group(in years)				
<23	26(38.8%)	41(61.2%)	6.255	0.012*
≥23	64(58.2%)	46(41.8%)		
Place of residence				
Urban	82(50.9%)	79(49.1%)	0.15	0.943
Rural	8(50.0%)	8(50.0%)		
Religion				
Hindu	87(52.4%)	79(47.6%)	2.608	0.106#
Non-hindu	3(27.3%)	8(72.7%)		
Ethnic group				
Brahmin/Chhetri	73(52.9%)	65(47.1%)	1.054	0.305
Dalit/Janajati	17(43.6%)	22(56.4%)		
Educational institute				
Government	12(46.2%)	14(53.8%)	1.269	0.604
Private	17(51.7%)	73(48.3%)		
Professional qualification				
PCL level	82(56.6%)	63(43.4%)	10.442	0.001*
Bachelor level	8(51.7%)	24(48.3%)		
Professional designation				
Staff nurse	83(55.3%)	67(44.7%)	7.917	0.005*
Senior staff nurse	7(25.9%)	20(74.1%)		
Clinical area				
General	48(47.1%)	54(52.9%)	1.382	0.24
Critical	42(56.0%)	33(44.0%)		
Professional experience				
<2years	54(63.5%)	31(36.5%)	10.524	0.001*
≥2years	36(39.1%)	56(60.9%)		
In-Service education				
Yes	24(66.7%)	12(33.3%)	4.525	0.033*
No	66(46.8%)	75(53.2%		

** Significant P value at <0.05; *Pearson Chi square, # Yates Correction*

DISCUSSION

The current study examined the knowledge and practice regarding IVT among nurses of CMCTH, Bharatpur. This study found that nurses' have inadequate knowledge and unsatisfactory practice on IVT. The mean percentage knowledge on IVT was 68.75%. This finding was supported by a study conducted by Vicdan (2013) in which average mean % knowledge score was 66.7%.[8] Similarly, it was found that only 49.1% respondents had adequate

Table 5: Association between Respondents Level of Practice on IV Therapy and Selected Variables

n= 53

Variable	Level of Practice		χ 2	p-value
	Satisfactory	Unsatisfactory		
Age group (in years)				
<23	13(56.5%)	10(43.5%)	1.641	0.2
≥23	22(73.3%)	8(26.7%)		
Place of residence				
Urban	34(65.4%)	18(34.6%)	0.524	0.469
Rural	1(100.0%)	0(0%)		
Religion				
Hindu	30(65.2%)	16(34.8%)	0.105	0.746
Non-hindu	3(71.3%)	2(28.7%)		
Ethnic group				
Brahmin/Chhetri	29(69.0%)	13(31.0%)	0.817	0.366
Dalit/Janajati	6(53.6%)	5(46.4%)		
Educational institute				
Government	7(70.0%)	3(30.0%)	0.086	0.769
Private	28(65.7%)	15(34.3%)		
Professional qualification				
PCL level	31(73.8%)	11(26.2%)	5.45	0.020#
Bachelor level	4(36.4%)	7(63.6%)		
Professional designation				
Staff nurse	30(71.4%)	12(28.6%)	3.622	0.04*
Senior staff nurse	5(45.5%)	6 (54.5%)		
Clinical area				
General	7(50.0%)	7(50.0%)	2.182	0.14
Critical	28(72.0%)	11(28.0%)		
Professional experience				
<2years	18(78.0%)	5(22.0%)	2.707	0.1
≥2years	17(57.0%)	13(43.0%)		
In-Service education				
Yes	12(66.7%)	6(33.3%)	0.05	0.9
No	23(65.8%)	12(34.2%		

** Significant P value at <0.05; * Pearson Chi square, # Yates Correction*

knowledge on IVT while a study conducted in Dhaka city by Hossain, (2016) found that 50.7 % had good knowledge on IVT.[9]

In this study, about two third of respondents (66.1%) had unsatisfactory practice (≤ 20 mean score ie.80% score) on IV therapy. This also explains there is plenty of variation among nurses' practice on IV therapy. Similar research was presented by Gunes & Celik (2002), Hadway (1999) found average practice score of 51%, more than two third of practice score i.e. 68% and nurses were not practicing appropriately regarding caring and maintaining peripheral intravenous canulation respectively.[2,10]

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The influencing factors to level of knowledge on IVT were age, professional qualification, professional experience, professional designation and in-service education in which more than half of the respondents (58.2 %) belonged to equal and more than 23 years had adequate knowledge. In this study bachelor level nurses had less (51.7%) knowledge on IVT than PCL nursing, senior staff nurse had less (25.9%) adequate knowledge on IVT than staff nurses (55.3%), ≥ 2 years professional experienced have less (39.1%) adequate knowledge on IVT than < 2 years professional experienced ones (63.5%) and not getting in-service education on IVT (46.8%) than participated in in-service education had adequate knowledge on IVT. The study done in Orrisa by Bijayalaxmi (2010) supported this finding in which less than 1 year professional experience (38.6%) had adequate knowledge on IVT than more than 2 years (29.4%) whereas B.Sc. nursing qualification were more knowledgeable than PCL Nursing nurses that was contradictory to this study findings.[11]

Study conducted by Vicdan (2013) supported this study finding in which 88.8 % of nurses having training on IVT were more knowledgeable than those who do not have.8 This signifies the importance of in-service education training for nurses. The results of the study show that level of practice is affected by qualification and designation on IVT. This finding was supported by Kagel & Rayan (2004).[12]

The study was conducted only on the private hospital in Chitwan, so the finding of the study could not be generalized in other setting like government and other hospital.

CONCLUSION

It is concluded that nurses' working at CMCTH had inadequate knowledge and unsatisfactory practice on IVT. The influencing factors for level of knowledge are age, professional qualification, professional designation, professional experience and in-service education and the level of practice are professional experience and professional designation. As both level of knowledge and practice is inadequate among nurses, it is recommended to have refresher training for experienced nurse and proper mentorship for inexperience nurse. In addition, Health care providers are accountable for safe and quality care delivery to the patients, so, they should be well resourced and enough trained. Furthermore, private hospital administration should emphasize on refresher training for senior nurses and qualified nurse to fulfill the practice protocols, so that the quality care can be provided.

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