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ASSESSMENT OF KNOWLEDGE ON PHLEBITIS AND ITS ASSOCIATED FACTORS AMONG NURSING STUDENTS IN SELECTED COLLEGE OF NURSING IN WEST BENGAL

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ABSTRACT

Introduction: Phlebitis is derived from the Latin term Plebe, which means vein, and -itis, which means inflammation. Phlebitis is developed due to an inflammatory reaction in the vein, most commonly due to a thrombus.

Aim: This study aim to assess the knowledge on phlebitis and its associated factors among nursing students in selected college of nursing, and association between knowledge on phlebitis and associated factors of phlebitis with demographic variables.

Method: The investigator conducted a descriptive study on assessment of knowledge on phlebitis and its associated factors among 4th semester B.Sc nursing student . Conceptual framework of study was based on' Health Belief Model, (Rosenstock,s 1974, Becker and Maiman,s 1975) revealed the relationship between a person's belief and behaviour. Ninety B.Sc. nursing students (4th semester) were selected as samples by non-probability purposive sampling technique to collect data. A valid reliable structured knowledge questionnaire was used for data collection. Descriptive and inferential statistics were used for data analysis

Result: The result revealed that the majority of 4th Semester B.Sc. nursing students obtained 80% average knowledge score on phlebitis and 72.22 % average knowledge score on associated factors of phlebitis. A significant association found between knowledge score of phlebitis and total duration of clinical exposure in weeks as chi-square value was 5.269 [3.841] at 0.05 level of significance. A significant association found between knowledge score of associated factors of phlebitis and total duration of clinical exposure in weeks as chi- square value was 3.946 [3.841] at 0.05 level of significance. The study has several implications in Nursing education, practice, administration, and research. The study concluded with recommendations for future intervention and improves policy implementation regarding phlebitis for reducing the infection.

Keywords: Phlebitis, Associated Factors of Phlebitis, Nursing Students

1. INTRODUCTION

During a hospital stay, the insertion of a peripheral intravenous catheter (PIVC) is a standard procedure. Most of patients are requiring the intravenous administration of fluid or medication1, blood and blood products, to draw blood sample and administer contrast agents required for imaging at some time during their hospital stay. Major complications increase to be more severe such as phlebitis,

Phlebitis is developed due to an inflammatory reaction in the vein, most commonly due to a thrombus. It typically presents with clinical signs of pain. erythema, swelling, induration, tenderness and for a cord like vein.

Nursing students education should be relevant and adequacy, has good quality, and adhered to their future professional. A nursing or medical student requires a summed up of theoretical knowledge and skills to effectively serve with their profession. Phlebitis has been linked to a variety of causes, including Fernández-Ruiz et al. (2014) chemical factors, irritating medications or infusions, and the osmolality of the substance being injected. Piredda et al. (2017) Mechanical aspects, such as the catheter's material and size, the quantity of drugs administered each day, the length of time the catheter is in the body, and the catheter inserter's skill. Lamsal, & Shrestha (2019) Infectious factors include the migration of organisms from the skin, along the catheter to the tip or from a contaminated hub, or if a catheter is left in place longer than the CDC recommends. Other factors include the healthcare professionals' maintenance of hand hygiene, their proficiency in appropriate skin preparation, and the injecting skills of the nurses. Ray-Barruel et al. (2014) Age of the patient's factors, gender, catheter insertion site, and medical circumstances such surgery, inadequate nutrition, or infectious or hypertensive illnesses are highlighted.

The incidence of phlebitis was estimated to be 31.4% in 2019 by another study carried out in Kalaikunda, West Bengal. Studies have indicated that, however, fewer than half of nurses had enough knowledge and practice; for example, in Egypt, 50.6%, 7.4%, Nepal, 49.1%, 33.9%, and India, 35%, 33%, respectively, had sufficient knowledge and practice. The knowledge and practice of nurses about the prevention of infections connected to intravenous cannulas were influenced by various factors, including age, sex, work experience, education level and training in this area. constant enhancements in quality Potential strategies to lower IV cannula-related infections include education, training, and adherence to established protocols. They lower the frequency of infection rate and also improve the knowledge and skills of nurses.

The incidence of phlebitis varies according to different contexts (3.7%–67.24%), depending on the population investigated and the definitions employed for diagnosis. Current research has also demonstrated the disparity between studies carried out in India. According to INS and CDC guidelines, a 5% phlebitis score is considered acceptable. A prospective study carried out in PGIMER, Chandigarh in 2011 found that the incidence rate of phlebitis was 29.8%. However, another study in the same setting that same year found that the rate was 56.5%.

In 2020, a tertiary care facility in Maharastra HBT Medical College did a prospective observational study that revealed a 6.4% incidence of phlebitis. In 2020, NEIGRIHMS

Hospital in Meghalaya conducted a descriptive observational study which revealed that the incidence of phlebitis was 50.94%.

The incidence and danger of infusion phlebitis using peripheral intravenous catheters was the subject of a meta-analysis that carried out by Lv. L, Zhang J in 2019. They contained 35 trials, with a 31% incidence of phlebitis and a 4% patient development rate for severe phlebitis. The studies that were considered showed that the development of phlebitis was caused by female patients, longer stays, forearm catheter placement, infusion of antibiotics for infectious diseases, and Teflon catheters.

More study found that incidence rate of phlebitis was more and associated factors in phlebitis were age, gender, site of insertion, size of catheter used, usage of the catheter for infusion and health care delivery person. Nursing students are important in health care delivery system.

They take care of the patient in the different clinical area. There was not so much study done on phlebitis and its associated factors among nursing students. Keeping these factors in mind, the investigator trying to conduct this study to assess the knowledge of phlebitis and its associated factors among nursing students.

2. STATEMENT OF THE PROBLEM

Assessment of knowledge on phlebitis and its associated factors among nursing students in selected college of nursing in west Bengal.

3. OBJECTIVES

1) To assess the knowledge of nursing students regarding phlebitis.
2) To assess knowledge of nursing students regarding associated factors of phlebitis.
3) To find out the association between knowledge of nursing students regarding phlebitis with demographical variables.
4) To find out the association between knowledge of nursing students regarding associated factors of phlebitis with demographical variables.

4. METHODOLOGY

This study was carried out using a descriptive survey research design that included non- probability purposive sample of 4th semester B.sc nursing students on knowledge of phlebitis and its associated factors. It was conducted in class room at two Govt College of Nursing in Kolkata, West Bengal. The eligible participants were willing to participant and available during data collection period. Participants who are GNM, Post Basic BSC and sick nursing student were excluded from this study. This study was based on Health belief model. Content validity of two tools was established by 07 experts from the field of Medicine, Community medicine, and medical surgical nursing. Reliability of both the tools was computed by Split half method, computed reliability were 0.79 and 0.75. Ethical approvals were obtained from the ethical committee of each targeted hospitals. All participants received informed consent forms to take part in the study. Both descriptive and inferential statistics (chi -square test) were used to analysis the data. Data analysis was planned on the basis of objectives of the

study using descriptive (frequency and percentage distribution, mean, median, standard deviation, mean percentage) and inferential statistics (chi square test).Considering the objectives of the study structured questionnaire tool was used and data were organized in five sections:section1 demographic characteristics of the sample;5 items including age in years, religion, marital status, general education , clinical exposure, section II assessment of knowledge of nursing students on phlebitis, section III assessment of knowledge of nursing students regarding associated factors of phlebitis, section IV association between knowledge on phlebitis with demographic variables, section V association between knowledge on associated factors with demographic variables.

5. RESULTS

A total of 90 nursing student were included in this study. The majority age group of the whole sample was 20-21 years. 82.22% were hindu, 96.67% were unmarried, 81.11% were H.S passed. 72.22% were above 20 weeks clinical exposure. Findings related to assessment of knowledge level on phlebitis 80%had average,11.11% had good, and 8.89% had poor.

Findings related to assessment of knowledge level on associated factors of phlebitis 72.22%had average,12.22% had good , and 15.36% had poor .

The chi – square test inferred that there was significant association found between knowledge score of phlebitis and total duration of clinical exposure of the respondent. Statistical significance was set at $p<0.05$. Significant association found between knowledge score on associated factors of phlebitis and total duration of clinical exposure of the respondent.

Statistical significance was set at $p<0.05$.

Table 1 showed that 47(52.22%) nursing students belonged to the age group 20-21 yrs. and 6(6.67%) nursing students belonged to the age group 24-25 yrs. 74(82.22%) nursing students were Hindu and 16(17.78%) were Muslim in religion. 87(96.67%) nursing students were unmarried and 3(3.33%) were married. 73(81.11%) nursing students passed Higher Secondary Examination and 17(18.89%) were graduate. 65(72.22%) nursing students had more than 20 weeks clinical experience and 25(27.78%) had 20 weeks or less clinical experience.

Table 1 **n=90**

Table 1	
Characteristics	**Frequency (%)**
Age (in years)	
20-21	47 (52.22)
22-23	37 (41.11)
24-25	6 (6.67)
Religion	
Hindu	74 (82.22)
Muslim	16 (17.78)
Marital status	
Married	3 (3.33)
Unmarried	87 (96.67)
Education	
H.S.	73 (81.11)
Graduate	17 (18.89)
Clinical Exposure	
≤20	25 (27.78)
>20	65 (72.22)

Section – II Findings related to the assessment of the knowledge of nursing students regarding phlebitis. Table 2 depicts that knowledge scores obtained by

participants range from 4-16 and mean knowledge score 11.83 with SD of 2.16 indicate the dispersion of knowledge scores. Here median of knowledge score is 12.

Table 2 **n=90**

Table 2

Variable	Range of possible score	Range of obtained score	Mean± SD	Median
Knowledge score on phlebitis	0-20	4-16	11.83±2.16	12

Maximum score = 2 Minimum score = 0

Table 3 showed that 72(80%) nursing students had average knowledge of phlebitis, 10(11.11%) nursing students had good knowledge of phlebitis and 8(8.89%) nursing students had poor knowledge of phlebitis.

Table 3 **n= 90**

Table 3

Level of knowledge	Range	Frequency	Percentage (%)
Good (>Mean+1SD)	>14	10	11.11
Average (Mean±1SD)	9.67 – 14	72	80
Poor (<Mean-1SD)	<9.67	8	8.89

Data presented in Table 4 showed that regarding area wise knowledge of nursing students regarding phlebitis., define of phlebitis and thrombophlebitis was first (98%), followed by anatomy and physiology of vein (92.67%), complication of phlebitis (74%), assessment of phlebitis (48%), management and prevention of phlebitis (46.16%) and signs and symptoms of phlebitis (33).

Table 4 **n=90**

Table 4

Area wise knowledge regarding phlebitis.	Maximum possible score	Mean	Mean%	Rank
Define of phlebitis and thrombophlebitis	2	1.96	98	1
Anatomy and physiology of vein.	3	2.78	92.67	2
Signs and symptoms of phlebitis.	1	0.33	33	6
Assessment of phlebitis	1	0.48	48	4
Management & Prevention of phlebitis	12	5.54	46.16	5
Complication of phlebitis	1	0.74	74	3

Section – III Findings related to the assessment of the knowledge of nursing students regarding associated factors of phlebitis. Table shows that knowledge scores obtained by participants range from 1-9 and mean knowledge score 6.89 with SD of 1.62 indicate the dispersion of knowledge scores. Here median of knowledge score is 7.

Table 5 **n=90**

Table 5

Variable	Range of possible score	Range of obtained score	Mean± SD	Median
Knowledge on associated factors of phlebitis	0-10	1-9	6.89± 1.62	7

Maximum score = 1 Minimum score = 0

Table 6 depicted that 65(72.22%) nursing students had knowledge regarding associated factors of phlebitis, 14 (15.56%) nursing students had poor knowledge and 11(12.22%) nursing students had good knowledge regarding this

Table 6 **n=90**

Table 6

Level of knowledge	Range	Frequency	Percentage (%)
Good (>Mean+1SD)	>8.51	11	12.22
Average (Mean±1SD)	5.26-8.51	65	72.22
Poor (<Mean-1SD)	<5.26	14	15.56

Table 7 showed that regarding knowledge of nursing students regarding associated factors of phlebitis, responsibility of health person was first (89%), causes of bacterial phlebitis

(81.50%), cause of chemical phlebitis (73.67%). causes of mechanical phlebitis (73%), cause of physical phlebitis (35%).

Table 7 **n=90**

Table 7

Area wise knowledge regarding associated factors of phlebitis.	Maximum possible score	Mean	Mean%	Rank
Causes of mechanical phlebitis	2	1.46	73	4
Causes of bacterial phlebitis	2	1.63	81.5	2
Causes of chemical phlebitis	3	2.21	73.67	3
Responsibility of health person	1	0.89	89	1
Cause of physical phlebitis	2	0.70	35	5

Section – IV Findings related to the association between knowledge of nursing students regarding phlebitis with demographical variables. Table 8 showed that clinical exposure was significantly associated with knowledge score of nursing students regarding phlebitis because in this case computed chi-square value (5.269) was greater than table value (3.841) at df1 of 0.05 level of significance.

Table 8 **n=90**

Table 8

Variables	Knowledge phlebitis <Median	scores of >Median	Total	χ2 value	df	P-value
Age (in yrs.)						
≤22	29	40	69			
>22	10	11	21	0.205	1	0.8415
Religion						
Hindu	30	44	74			
Muslim	9	7	16	1.322	1	0.2502
Marital status						
Married	2	1	3			
Unmarried	37	50	87	0.056*	1	0.812
Education						
H.S.	31	42	73			
Graduate	8	9	17	0.118	1	0.7312
Total duration of Clinical exposure in weeks						
≤20	6	19	25			
>20	33	32	65	**5.269**	1	**0.0217**

χ^2 (1) = 3.841, p<0.05, *Yates correction

Section – V Findings related to the association between knowledge of nursing students regarding associated factors of phlebitis with demographical variables. Table 9 showed that Clinical exposure was significantly associated with knowledge score of nursing students regarding associated factors of phlebitis because in this case computed chi square value (3.946) was greater than table value (3.841) at df1 of 0.05 level of significance.

Table 9 **n=90**

Table 9

Variables	Knowledge **associated** phlebitis <Median	scores of **factors of** >Median	Total	χ2 value	df	P-value
Age (in yrs.)						
≤22	21	48	69			
>22	8	13	21	0.433	1	0.510
Religion						
Hindu	25	49	74			
Muslim	4	12	16	0.150*	1	0.699
Marital status						
Married	2	1	3			
Unmarried	27	60	87	0.449*	1	0.502
Education						

H.S.	21	52	73			
Graduate	8	9	17	1.358	1	0.244
Total duration of Clinical exposure in weeks						
≤20	12	13	25			
>20	17	48	65	**3.946**	1	**0.047**

x^2 (1) = 3.841, p<0.05, *Yates correction

6. DISCUSSION

Discussion related to socio-demographic characteristics of nursing students in the present study subjects were (20-25) year. Majority of nursing students 47(52.22%) belonged to 20-21 age group.

The present study was partially supported by Bibi. S, Parveen. K, Abdullahi.DK, Afzal. M, Gilani.SA in 2022 conducted a study to assess knowledge regarding perception of risk factors for phlebitis among nursing student. The study was held in university of Lahore for 6 months, a quantitative descriptive cross-sectional design was used. The students had sample size 94.

Majority of nursing students less than 20 years age group 69(73.4%). Discussion related to knowledge score of nursing students regarding phlebitis.

The present study revealed that 72(80%) nursing students had average knowledge of phlebitis, 10(11.11%) nursing students had good knowledge of phlebitis and 8(8.89%) nursing students had poor knowledge of phlebitis.

The present study findings were supported by Maraka. N, Moshashe. F in 2021 was conducted a cross-sectional descriptive study to assess knowledge and practice towards short peripheral catheter care among first-year up-grading nursing students at Al-Quds University in Palestine. Study findings were 46.1% having low experience and 50-70% which was in moderate knowledge level.

The present study was partially supported by a descriptive study conducted by a Ramesh S, Suji M in 2020 investigates a study to assess the knowledge and practice of student nurses towards care and maintenance of IV cannula. Most student nurses (68%) has good subject knowledge of caring and maintaining peripheral intravenous cannulation but there were some (8%) without proper knowledge

Discussion related to knowledge score nursing students regarding associated factors of phlebitis

The present study depicted that 67(74.44%) nursing students had average knowledge regarding associated factors of phlebitis, 14(15.56%) nursing students had poor knowledge and 9(10%0) nursing students had good knowledge regarding this.

The study findings were partially supported by the study Hu. J et al (2024) conducted to investigate the current situation of knowledge of intern-nursing students in VCAIs, and analyse its influencing factors. Intern nursing students' mean score of VCAIs knowledge was

48.66 (SD=15.77), with a score below 60 (unqualified) accounting for 75.4%, a score of 60– 79 (qualified) accounting for 19.7%, a score of 80–89 (good) accounting for 3.6%, and a score of above 90 accounting for 1.3%.

The study findings were partially supported by Harshani. RA and Perera. PP a study to evaluate the knowledge and attitudes of final year nursing students on

infusion phlebitis. Most of the students had fair knowledge (60.6%) and mean knowledge score was 48.8.

Discussion related to association between knowledge score regarding phlebitis and selected demographical characteristic

The present study showed statistically significant association between the knowledge score of phlebitis and selected socio-demographic characteristics such as total duration of clinical exposure in weeks

The study findings likely to be supported by study conducted by Sinha. P, Sahu. P, and Chaudhary. R (2022) to evaluate the knowledge of intravenous cannulation among BSc. Nursing students A statistically significant correlation (P = 0.011) was found between the students' academic year and their degree of expertise.

7. CONCLUSIONS

The findings indicate that the 4th semester B.Sc. nursing students are average knowledge level on phlebitis and associated factors of phlebitis. There were significant association present between knowledge score of phlebitis and total duration of clinical exposure in weeks among nursing students. There were significant association present with knowledge score of associated factors of phlebitis and total duration of clinical exposure in weeks among nursing students.

The study findings would help to expands the scientific body of knowledge which serve as a valuable reference for future investigators.

8. LIMITATION

Some participants are quit in middle of the data collection procedure. Non probability purposive sampling technique was used for selecting sample which reduced the scope of generalization. The structured knowledge questionnaire was used to collect data. So, the responses were restricted.

CONFLICT OF INTERESTS

None.

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