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Assessment of Knowledge and Self Reported Clinical Practice on Prevention of Deep Vein Thrombosis (DVT) Among Staff Nurses

Mr.Abin M Antony[1] Mrs. K T Moly[2] Ms. Dhanya R Dharan[3]
M.sc Nursing Student[1],Amrita college of Nursing, Amrita Institute of Medical Sciences, AIMS, Kochi
Principal[2], Amrita College of Nursing, Amrita Institute of Medical Sciences, AIMS, Kochi
Lecturer[3], Amrita College of Nursing, Amrita Institute of Medical Sciences, AIMS, Kochi

Abstract: *A descriptive study to assess the knowledge and self reported clinical practice on prevention of Deep Vein Thrombosis (DVT) among staff nurses working in selected units in a tertiary care hospital, Kochi.* ***Objectives of the study are to****: (1) assess the knowledge of staff nurses on the prevention of Deep vein thrombosis (DVT). (2) find out the self reported clinical practice of staff nurses on prevention of Deep vein thrombosis (DVT). (3) find out the association between the knowledge and self reported clinical practice of staff nurses on prevention of Deep Vein Thrombosis (DVT). (4) prepare an informational booklet on the prevention of Deep vein thrombosis (DVT).*
Methodology: *The study was conducted among 100 subjects who met the eligibility criteria using non probability convenience sampling technique.*
Results: *Eventhough, majority of the subjects, 50(50%) had adequate experience and exposure in the respective unit as a registered nurse, knowledge on DVT seems to be average (58%) to poor (42%). As the data was collected using self reported practice checklist, it was expected to have some inflation in the scoring. But the result was striking as majority had average (14%) and poor practice (86%) on prevention of DVT. There was no significant association between knowledge and practice of staff nurses on prevention of DVT among hospitalized patients. The study throws light on the fact that staff nurses with average knowledge are also not practicing it in clinics.*
Conclusion*: The study findings revealed the fact that no staff nurses were having a good knowledge and a good practice, inspite of the fact that 60% of them were graduates. DVT is often negligible, even though, life threatening conditions are associated with it such as PE. The assessment of mere knowledge may not give an accurate result of their practice. It also shows that rather than memorizing, practice is always hands on training. Moreover, it throws light on the fact that degrees have no meaning, if it is not practiced well in clinics.*
Key Words: *knowledge, self reported clinical practice, prevention of Deep Vein Thrombosis.*

I. Introduction

Venous thromboembolism (VTE), an obstruction of a vein by a blood clot, is the third most common cardiovascular disease in the Western world, occurring in about 0.1% of people every year**.** Venous thromboembolic disease (VTE) is a term encompassing deep vein thrombosis (DVT) and pulmonary embolism (PE) or a combination of both[1].

DVT is a silent killer, which kills more people than AIDS, breast cancer, prostate cancer and road accidents combined[2]. Every year over 4 million patients worldwide are affected by DVT**.** According to Centres for Disease Control (CDC), the precise number of people affected by DVT/PE is 3, 00,000 to 6, 00,000(1-10 per 1000)[3]. The incidence of DVT in India as reported is one percent of the adult population after the age of fifty and is 15% to 20% in hospitalized patient's and1 in 100 who developed DVT can develop PE which can be fatal. In Kerala, prevalence of DVT is 88.5% of critically ill patients belonged to high risk group according to the risk assessment model[4]. High risk group consists of medical and surgical conditions especially immobile patients and clients after Cardiac, Orthopaedic, Neuro and Gastro surgery

National institute of health survey results of health care providers in the year 2008 revealed that in many hospitals, prophylaxis for DVT/PE is not yet standard practice. Result shows that DVT occurs in ten to fourty percent of Medical or General Surgery patients and in 40–60% of patients after major Cardiac, Orthopaedic, Gastro and Neurosurgery[5].

In AIMS, 160 cases of DVT and 90 cases of pulmonary embolism were detected in the year 2012. 23 cases of DVT were detected in Cardiac patients, 8 cases in Gastro Surgeries, 2 cases each in Orthopaedic and Neuro Surgeries. 26 cases of Pulmonary Embolism were detected in cardiology, 16 cases in Orthopaedic, 5 in Gastro surgeries, 4 cases in Neurosurgery. The figure seems to be significant in terms of number of hospitalizations per year.

Nurses are the frontlines in terms of delivery of the therapeutic regimens of both prevention and treatment for DVT. They must follow standards of care and intervention to prevent this life threatening complications. Their knowledge and practices undoubtedly leads to an improvement in the delivery of patient care[6]. The teaching materials for DVT and its prophylaxis would have improved the existing practices. But, unfortunately investigator noted that an inadequacy of teaching materials regarding DVT prophylaxis for nurses at AIMS. Hence, investigator decided to develop a teaching material for the nurses regarding DVT prophylaxis.

Objectives

The objectives of the study are to

1. assess the knowledge of nurses on the prevention of Deep vein thrombosis (DVT).
2. find out the self reported clinical practice of staff nurses regarding prevention of Deep vein thrombosis (DVT).
3. find out the association between the knowledge and clinical practice of staff nurses on prevention on DVT.

Assumptions

1. The knowledge regarding prevention of DVT influences its practice.
2. The knowledge and practice of staff nurses in prevention of DVT may vary according to his or her previous experience.

II. Materials And Methods

Research approach

. Quantitative research approach was used to assess the knowledge and self reported clinical practice of staff nurses on prevention on DVT.

Research design

The research design selected for the study was non experimental descriptive design.

Research Setting

The present study was conducted in the six selected ICUs namely Coronary Care unit T6F2, Cardiovascular and thoracic ICU (adult) T6F1, Intensive care unit (T5F2), Orthopaedic and Neuro Surgery ICU (T4F1) and Intermediate care unit (T6F4) and Gastro surgery ICU of Amrita Institute of Medical Sciences, Kochi.

Sample and Sampling technique

Non probability, convenience sampling technique was used for sampling and subjects were selected based on the sample selection criteria**.**

Sample size

To calculate the sample size the researcher used the following formula[7]

$n = 16\sigma^2/W^2$.

'n' is the sample size

'σ ' is the Standard deviation

W is the confidence interval, represents in width.

$$4\sigma/\sqrt{n} = W$$

From the pilot study, it was identified that standard deviation was 4.76 and the 'W' was 2. The estimated sample size was 90.63 and the researcher adopted a sample size of 100.

Data collection instruments and techniques

TOOL 1: Semi structured questionnaire to assess the knowledge of staff nurses on prevention on DVT. It has two sections. They were

Section A: Socio demographic data

Socio demographic data includes 7 items regarding gender, age, years of experience as staff nurse and the respective unit, previous knowledge regarding DVT and means of acquiring knowledge.

Section B: Structured knowledge questionnaire

. The questionnaire includes definition, risk factors, pathophysiology, signs and symptoms, diagnostic investigations, complications, management and preventive aspects have been included as these information are the minimum requisites for a nurse caring for patients prone for DVT. Each correct answer carries one mark and wrong answer carries zero. Maximum score is 36. The scores are categorised as:

Good knowledge: 25-36

Average knowledge: 13-24

Poor knowledge: 0-12.

TOOL2. Self reported practice checklist to assess the practice of staff Nurses on prevention of DVT

Self reported practice checklist was used for assessing the practice of staff nurses regarding prevention of DVT. It includes assessments, medications, preventive practices and patient teaching aspects. Each "yes" carries one mark and "No" carries zero mark. Maximum score is 18.The scores are categorised as:

Good practice: 13-18 (above 66.6%)
Average practice: 6-12 (33.33-66.6%)
Poor practice: 0-5 **(**below 33%)

Content validity

. The content validity index for the tool was obtained by I (CVI) and S (CVI) is 0.9.

Reliability

Split half technique was used to test the reliability of self reported practice checklist and knowledge questionnaire and reliability coefficient was found to be 0.8.

Pilot Study

A pilot study was conducted at Annexe MICU among 10 subjects. Sample was selected by convenience sampling, based on the inclusion criteria

Major results of the pilot study were as follows:

- Majority 8(80%) of the subjects had average knowledge and 2(20%) of subjects had poor knowledge regarding the prevention of DVT.
- All staff nurses 10 (100%) had average practice for DVT prophylaxis among hospitalized patients.

Modifications after pilot study

After pilot study, data collection period was modified. Researcher given time duration for 15-20 minutes for the staff nurses to provide the data, but they were struggling to finish their questionnaire within this stipulated time. So investigator planned to give 30 minutes for the data collection during main study.

Procedure for Data collection

The investigator approached the 100 staff nurses who were working in cardiac, orthopaedic, Neuro and Gastro Surgery ICUs of AIMS during data collection period. Subjects were selected based on the eligibility criteria and were explained regarding the purpose of the study. Tools were administered after each shift when informed consent was obtained and given 30 minutes to complete the whole questionnaire. .

III. Results

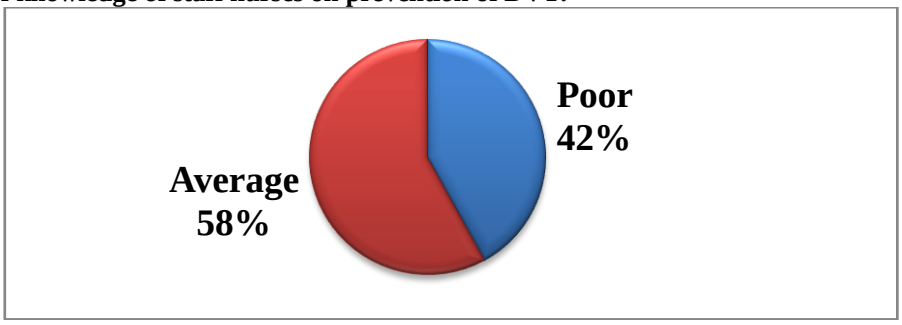
Major Findings of the Study

1. Among 100 staff nurses working in critical care units, 58(58%) had average knowledge and 42(42%) had poor knowledge on the prevention on DVT among hospitalized patients.
2. Among 100 staff nurses working in critical care units, 86(86%) had poor practice and 14(14%) had average practice on preventing DVT among hospitalized patients.
3. There was no significant association between the knowledge and practice of staff nurses on prevention of DVT among hospitalized patients.

Other Relevant Findings of the Study

1. Majority 90(90%) of the subjects were females.
2. Majority 65(65%of the subjects had more than one year of experience as a registered nurse.
3. Among 100 subjects, 53(53%) of the subjects had more than one year of experience as a registered nurse in the respective unit.
4. Majority 60(60%) of the subjects were graduates
5. Majority of the subjects 99 (99%) had previous knowledge whereas only 27(27%) had acquired knowledge through clinical practice

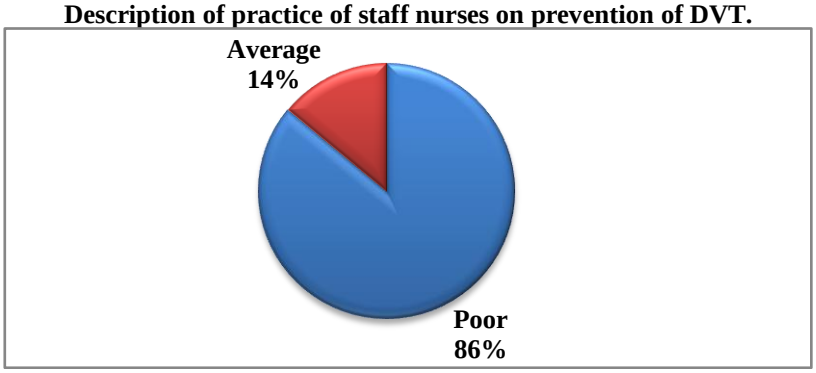
Description of knowledge of staff nurses on prevention of DVT.



Pie Diagram Showing Knowledge Level of Staff Nurses On Prevention of DVT

Pie diagram illustrates the fact that not even a single staff nurse had good knowledge on prevention of DVT, inspite of the fact that 60% of them were graduates. More than half of the subjects 58(58%) had average knowledge and 42(42%) had poor knowledge on prevention of DVT. Eventhough, majority of the subjects, 50(50%) had adequate experience and exposure in the respective unit as a registered nurse, knowledge on DVT seems to be average to poor.

Description of practice of staff nurses on prevention of DVT.



Pie Diagram Showing Practice level of Staff Nurses

Pie diagram shows that majority of the Subjects 86(86%) had poor practice and only 14(14%) had average practice on the prevention of DVT among the hospitalized patients. As the data was collected using self reported practice checklist, it was expected to have some inflation in the scoring. But the result was striking as majority had poor practice on prevention of DVT.

Association of knowledge and practice of staff nurses on prevention of DV Association between knowledge and practice score of Staff Nurses in care of hospitalized patients for the prevention of DVT.

(n=100)

Level of practices	Poor		Average		Chi square	Table value at 5% level	df	P-value
	Frequency	Percent	Frequency	Percent				
Poor	39	92.9	47	81.0			1	0.093
Average	3	7.1	11	19.0	2.828^{ns}	3.841		
Total	42	100	58	100				

Table value of χ^2 =3.41, ns=not significant, p=<0.05

The data presented in Figure VII shows that there was no significant association between knowledge and practice of staff nurses on prevention of DVT among hospitalized patients. The study throws light on the fact that a staff nurse with average knowledge is also not practicing it in clinics. The assessment of mere knowledge may not give an accurate result on their practice. Moreover, it poses a threat to the existing practices on prevention of DVT among hospitalized patients.

IV. Discussion

The first objective was to assess the knowledge of staff nurses on the prevention of DVT.

In the present study among 100 staff nurses working in critical care units 58(58%) had average knowledge and 42(42%) had poor knowledge on prevention of DVT among hospitalized patients. It is to be noted that not even a single staff nurse had good knowledge on prevention of DVT, inspite of the fact that 60% of them were graduates.

Similar findings were observed in the descriptive study conducted by Asma Ahamad[8] in the year 2003 among 150 registered nurses working in Iran. Study found that mean percentage score ± SD on the knowledge scale was 36.9% ± 20.2 and 47.19% ± 25. Results revealed the fact that only 34.2% of nurses had heard about the importance of preventing DVT. Study concluded that the RNs level of knowledge on prevention of DVT was very low which strongly influences the practices of health care providers working in that unit. The similarity noted with the present study may be due to poor training and lack of continuing nursing education for staff nurses on DVT.

Descriptive study conducted by Henwood PC, Kennedy TM, Thomson L[9].among staff nurses working in critical care units in Western parts of North Africa, found that 58% had poor knowledge and 42% had average knowledge on the prevention of DVT. Study highlights the importance of continuing nursing education which helps to maintain good knowledge and standards of care. This may be due to the lack of in service education on DVT.

Unlike these studies, a cross-sectional study conducted by Said AT [10] among 118 Intensive care (ICU) nurses in the year 2012 at Muhimbili National Hospital (MNH) Tanzania, to identify knowledge of ICU nurses on prevention of Ventilator Associated Pneumonia (VAP). Results revealed that 64 (54.2%) had excellent knowledge, 19 (16.1%) had very good, 23(19.5%) had good, 10(8.5%) had average and 2 (1.7) poor knowledge. Study concluded that majority of the staff nurses 64(54.2%) had excellent knowledge on prevention of VAP. The variation in results may be due to the delivery of ample number of continuing nursing education sessions and staff development programs to the staff nurses.

The second objective was to find out the self reported clinical practice of staff nurses regarding prevention of Deep vein thrombosis (DVT).

In the present study, among 100 staff nurses working in critical care units 86(86%) had poor practice and 14(14%) had average practice on prevention on DVT among hospitalized patients. A cross sectional study conducted by Ahsin.M[11] in 2010 at five teaching hospitals of Rawalpindi among 130 healthcare providers (63.8%) found that practices regarding DVT prevention among hospitalised patients is less than ideal. Results show that 65.5% of staff nurses show a lack of awareness of the gravity of the situation as well as a lack of knowledge. The congruent results with the present study may be due to inadequate existing practices on DVT prevention.

Moreover, a descriptive study conducted by Salmi L.R, Fialon.[11], in the year 2012 in 14 hospitals in Aquitaine to identify the self reported practice of 1090 staff nurses on transfusion safety procedures. Results revealed that majority of the staff nurses (85%) had poor practices on safety precautions. Study concluded with the fact that education alone is not sufficient for observance of these standards. It is quite interesting to note that, the findings are exactly the same, this may be due to gap between curriculum and clinical practice, which will help in adherence with the standards of organisational policies and also it traces about the importance given in the curriculum and clinical practice.

Unlike these studies, a cross sectional study conducted by Hui L, Chan EY[12] to assess the practices of 244 staff nurses regarding oral care for critically ill patients admitted in Singapore General hospital. Results revealed that only 70 (66.3%) had followed adequate practices of oral care in critically ill patients. Study emphasized the need for continuing education in all areas to improve the practical skills and skill based training. The variation of results may be due to the healthy hygiene practices followed in the hospitals.

The third objective was to find out the association between the knowledge and clinical practice of staff nurses on prevention on DVT.

In the present study, there was no significant association between the knowledge and practice of staff nurses on prevention of DVT among hospitalized patients. Inspite of the study results which should around 58% had average knowledge, when it comes to practice, it is hardly 20%, it may be probably because there are no strict protocols making it evident the practice of these nursing measures to prevent DVT. This also emphasizes the importance of proper attitude in patient care.

Similarly, a cross-sectional study was conducted by Isara AR, Omuemu VO, and Omorogbe VE[13] in 2012 among 122 staff nurses to assess the knowledge and practice of injection safety in mission hospitals of Benin City, Nigeria. Results revealed that there was no significant association (χ^2=38.62,p<0.001) between the knowledge (55.7%) and practices (48.4%) on injection safety among the respondents. The congruence of results with the present study may be due to the underutilisation of knowledge on injection safety in practice.

A cross-sectional study was conducted by Ansari.A, Adib.M[14] in the year 2012 among 44 staff nurses working in three ICUs in Shahid Behesthi Hospital to identify the gap between knowledge and practice in standard ET suctioning of ICU nurses. Results revealed that there was no significant association (χ^2=37.4, p<0.001) between the respondents' knowledge 5.4($\pm$1.12) and practices 0.81($\pm$0.71) . The similarity in results may be due to the lack of experience, poor training workshops and demonstrations.

Unlike these studies a descriptive study conducted by Raja.S , Mahil[15] in the year 2005 to assess the knowledge and practice of the staff nurses regarding the post operative nursing care of the children with congenital heart disease in Paediatric Intensive Therapy Unit of Narayana Hrudayalaya Institute Of Cardiac Sciences, Bangalore. Results revealed that the mean knowledge score and practice score of the subjects was 21.82 and 20.80. The association between the knowledge and practice was found to be significant (χ^2=38.38, p<0.001). The variations in results may be due to frequent continuing nursing education session and training workshops at the hospital.

Recommendations

On the basis of the present study the investigator put forward some recommendations to conduct further studies.

1. The study can be replicated on a large sample to validate and generalize the findings of the present study.

2. A study may be conducted among staff nurses working in critical care units to assess their direct practice instead of self reported practice, on prevention of DVT
3. A study to identify the performance obstacles among nurses working in various critical care units may be conducted on DVT prevention
4. A mixed method study may be conducted to identify the factors that lead to poor practice among staff nurses working in critical care units on DVT prevention.

Implications of the study

The present study has got implications in the field of nursing education, nursing administration, nursing practice and nursing research. Findings from this study can be used to focus knowledge practice barriers to deliver high quality and safe patient care and improve their knowledge as well as practice standards.

Nursing practice

1. Nurse Managers should see that strict guidelines are made and adhered by the nurses working in critical care units on prevention of DVT.

2. Nurses have the responsibility to identify knowledge practice gap and undergo training and in service education to develop those skills.

3. Monitoring critically ill patients for DVT and its lethal complications must be a day to day practice to create a right attitude to the new nurses who are caring the patients.

Nursing Education

1. Nursing curriculum should emphasize the preventive aspects of DVT.

2. Prevention of DVT should be given more significant for those who are practicing in critical care units by health education, demonstration, clinical teaching and role plays etc, and making a right attitude of patient with DVT.

3. Supervisors make it practice of checking on a daily basis for DVT prevention.

Nursing administration

1. Nurse administrator should always note the areas of knowledge practice gap and should organize time to time training based on priority areas.

2. Clinical guidelines on prevention of DVT must be made easily available and accessible in the unit to enable the practice even for new nurses

3. The nurse managers have a moral obligation to look into factors that may lead to poor practice, draw inferences and initiate remedial measures.

Nursing Research

1. Effectiveness of training session on prevention of DVT among staff nurses working in critical care units.

2. An observational study may be conducted to identify the practice of staff nurses in critical care units.

3. An explorative study may be conducted to identify factors leading to poor practice.

4. A study to explore best practices in preventing DVT based on review of curriculum.

Limitations

- Randomization was not done due to time constraints.
- All subjects in the study were working in critical care areas and they were under pressure while filling the questionnaire.

V. Conclusion

The study findings revealed the fact that no staff nurses were having a good knowledge and a good practice, inspite of the fact that 60% of them were graduates. DVT is often negligible, even though, life threatening conditions are associated with it such as PE. The assessment of mere knowledge may not give an accurate result of their practice. It also shows that rather than memorizing, practice is always hands on training. Moreover, it throws light on the fact that degrees have no meaning, if it is not practiced well in clinics.

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