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Research Article

A Study to Develop and Implement Protocol Regarding Recombinant Tissue Plasminogen Activator Administration for Nurses in Selected Hospitals Pune

Digvijay R. Patil

Department of Medical-Surgical Nursing, Bharati Vidyapeeth College of Nursing, Navi Mumbai, Maharashtra, India

Abstract

Background: A nurse is a health-care professional who is engaged in the practice of nursing. Nurses are men and women who are responsible (along with other health-care professionals) for the treatment, safety, and recovery of acutely or chronically ill or injured people, health maintenance of the healthy, and treatment of life-threatening emergencies in a wide range of health-care settings. **Objectives:** The objective of the study was to assess knowledge and practice before and after development and implementation of protocol, to develop protocol, to implement protocol, and to find out association between knowledge and practices with demographic variables. **Materials and Methods:** The study was conducted at the Dr. D. Y. Patil Hospital and Lokmanya hospital Pimpri, Chinchwad of Pune city. The sample sizes selected for this study were 100 staff nurses. A sampling technique is the name or other identification of the specific process by which enitiate of the sample has been selected. In this study, non-probability purposive sampling technique is used. **Results:** About 45% of the nurses had age 21–30 years, 29% of them had age 31–40 years, 19% of them had age 41–50 years, and 7% of them had age above 50 years. About 43% of them had GNM, 31% of them had B.Sc. Nursing, 24% of them had Post Basic B.Sc., and 2% of them had M.Sc. Nursing. About 29% of them were males and 71% of them were females. About 40% of them had 6 months–5 years of experience, 30% of them had 6–10 years of experience, 20% of them had 11–15 years of experience, and 10% of them had more than 15 years of experience. **Conclusion:** The overall experience of conducting this study was satisfying one, as there was good cooperation from ICU staff nurses.

Key words: Nurse, plasminogen activator, recombinant tissue, sampling technique

Address for correspondence: Digvijay R. Patil, Department of Medical-Surgical Nursing, Bharati Vidyapeeth College of Nursing, Navi Mumbai, Maharashtra, India. E-mail: digvijay99patil@gmail.com

Introduction

A nurse is a health-care professional who is engaged in the practice of nursing. Nurses are men and women who are responsible (along with other health-care professionals) for the treatment, safety, and recovery of acutely or chronically ill or injured people, health maintenance of the healthy, and treatment of life-threatening emergencies in a wide range of health-care settings.[1] Nurses may also be involved in medical and nursing research and perform a wide range of non-clinical functions necessary to the delivery of healthcare. Nurses develop a plan of care, sometimes working collaboratively with physicians, therapists, the patient, the patient's family, and other team members.[2,3]

Nurses are performing basic nursing procedures such as mouth wash, sponge bath, back-care, vital signs checking, also advanced nursing procedures IV Cannulation, O_2 therapy, Ryles Tube Suctioning, and one of the procedures drug administration each drug having different S.O.P for administration.[4] Everyday new medication is discovered for better treatment so need to develop S.O.P. Tissue plasminogen activator (t-PA) is golden treatment for patient with stroke. Milestones in the development of tissue-type plasminogen activator as a fibrin-specific thrombolytic

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agent include: Purification of human t-PA from the culture fluid of the Bowes melanoma cell line, elucidation of the molecular basis of fibrin-specific plasminogen activation, first experimental animal models of thrombosis, first patient (renal allograft) treated with melanoma t-PA, pilot studies in patients with acute myocardial infarction, cloning, and expression of recombinant t-PA providing sufficient amounts for large scale clinical use, and demonstration of its therapeutic benefit in large multicenter clinical trials.[5,6]

Systemic activities to prevent or cure health problems in humans are delivered by health-care providers. The medicine man, the priest, the herbalist and magicians, all tried to bring relief to the sick in an almost complete absence of scientific medical knowledge. As the world becomes modernized, the advent of new technologies discovered many methods of treating diseases and illness.[7] The global burden of disease study suggests that by the year 2020 India will have more individuals with atherothrombotic cardiovascular diseases than any other region.[8] The objective of the study was to assess knowledge and practice before and after development and implementation of protocol, to develop protocol, to implement protocol, and to find out association between knowledge and practices with demographic variables.

Materials and Methods

Research setting

The study was conducted at the Dr. D. Y. Patil Hospital and Lokmanya hospital Pimpri, Chinchwad of Pune city.

Sample

A sample is a smaller part of the population selected in such a way that the individuals in the sample represent the characteristics of the population. In the present study, the samples are staff nurses at age of 21–above 50 years from selected hospital.

Sample size

An optimum sample in survey is one which fulfills the requirements of efficiency, representativeness, reliability, and flexibility. The sample sizes selected for this study were 100 staff nurses.

Sampling technique

A sampling technique is the name or other identification of the specific process by which enitiate of the sample has been selected. In this study, nonprobability purposive sampling technique is used.

Inclusion criteria

The following criteria were included in the study:

1. Nurses having more than 6 month of ICU experience and emergency department.
2. Present at the time of data collection.
3. Those are willing to participate in the study.

Exclusion criteria

Samples those are not present at time of data collection were excluded from the study.

Procedure for data collection

Data were collected from September 9 to September 25, 2015. Formal written permission was obtained from Medical superintendent of the Lokmanya Hospital, Chinchwad and Dr. D. Y. Patil Hospital of the Pimpri of the Pimpri Chinch wad Municipal Corporation, Pune.

The data collection technique used was questioning. First, the purpose of study was explained to each staff nurses and confidentiality of their response was assured. The investigator approached the subjects and obtained informed consent. The investigator administered the structured questionnaire. The duration of the data collection for each sample was 15–20 min. In 1 day, 12–13 samples were collected. Actual data collection was done on 100 staff nurses working in ICU meeting the criteria of the study. As all participates were very interested and cooperative, the session was a good experience.

Results

Section 1: Description of samples (nurses) according to their personal characteristic.

About 45% of the nurses had age 21–30 years, 29% of them had age 31–40 years, 19% of them had age 41–50 years, and 7% of them had age above 50 years, as shown in Figure 1.

About 43% of them had GNM, 31% of them had B.Sc. Nursing, 24% of them had Post Basic B.Sc., and 2% of them had M.Sc. Nursing, as shown in Figure 2.

About 29% of them were males and 71% of them were females, as shown in Figure 3.

About 40% of them had 6 months–5 years of experience, 30% of them had 6–10 years of experience, 20% of them had 11–15 years of experience, and 10% of them had more than 15 years of experience, as shown in Figure 4.

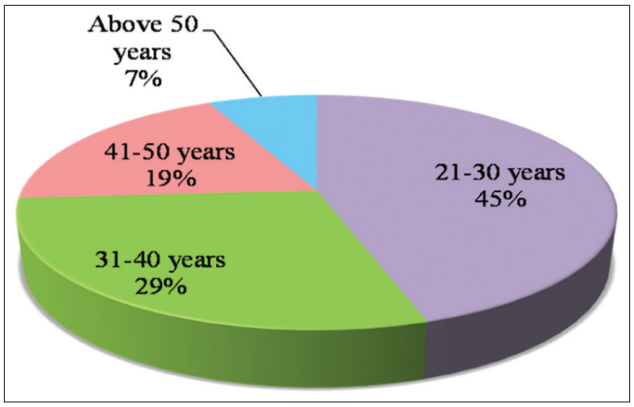

Figure 1: Description of samples with age

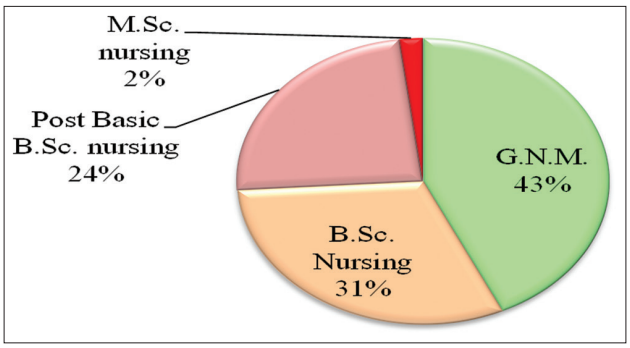

Figure 2: Description of samples with professional qualification

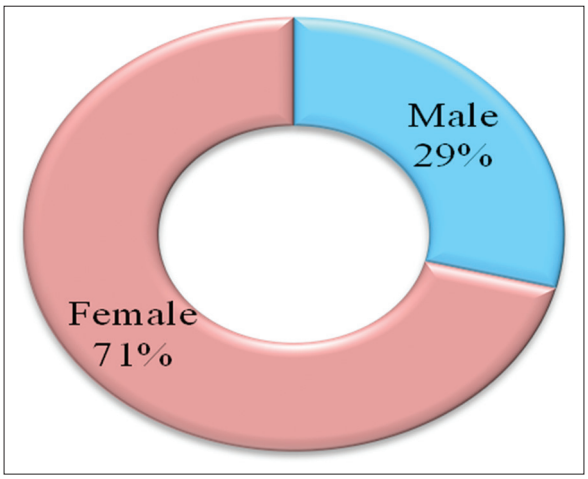

Figure 3: Description of samples with gender

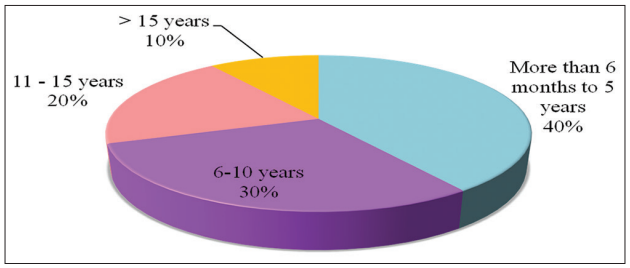

Figure 4: Description of samples with years of experience

Section II: Analysis of data related to knowledge of nurses regarding rtPA administration.

In pre-test, majority of 69% of the nurses had average knowledge (score 16–30) and 31% of them had poor knowledge (score 0–15) regarding rtPA administration, as shown in Table 1.

Section III: Analysis of data related to knowledge of nurses regarding before and rtPA administration.

In pre-test, the majority of 69% of the nurses had average knowledge (score 16–30) and 31% of them had poor knowledge (score 0–15) regarding rtPA administration. In post-test, 52% of them had average knowledge (score 16–30) and 48% of them had good knowledge (score 31–46) regarding rtPA administration. This indicates that the knowledge of the nurses improved after protocol regarding rtPA administration, as shown in Table 2.

Table 1: Knowledge of nurses regarding rtPA administration *n*=100

Knowledge	Pre-test	
	Frequency	%
Poor (score 0–15)	31	31
Average (score 16–30)	69	69
Good (score >30)	0	0

Table 2: Knowledge of nurses regarding rtPA administration before and after *n*=100

Knowledge	Pre-test		Post-test	
	Frequency	%	Frequency	%
Poor (score 0–15)	31	31	0	0
Average (score 16–30)	69	69	52	52
Good (score >30)	0	0	48	48

Researcher applied paired *t*-test for comparison of pre-test and post-test knowledge of nurses regarding rtPA administration. Average pre-test knowledge score was 17.2 which increased to 30.4 in post-test. *t*-value for this comparison was 24.3 with 99° of freedom corresponding $P = 0.000$, which is small (<0.05). The null hypothesis is rejected and accepted alternative hypothesis. Hence, protocol regarding rtPA administration was found to be significantly effective in improving the knowledge and practices of nurses, as shown in Table 3.

Section IV: Analysis of data related to association of knowledge of nurses regarding rtPA administration with their demographic variables.

Association of knowledge of nurses regarding rtPA administration with their demographic variables was assessed using Fisher's exact test. The summary of Fisher's exact test is tabulated in Table 4.

Gender was found to have significant association with knowledge of nurses regarding rtPA administration, as shown in Table 5.

Discussion

Section I: Description of samples according to their personal characteristic.

Study deals with a summary as well as its implications for nursing and health-care services followed by its implications as well as suggestions and recommendations for future research in this field. With regard 45% of the nurses had age 21–30 years, 29% of them had age 31–40 years, 19% of them had age 41–50 years, and 7% of them had age above 50 years. About 43% of them had GNM, 31% of them had B.Sc. Nursing, 24% of them had Post Basic B.Sc., and 2% of them had M.Sc. Nursing. About

Table 3: Paired *t*-test for comparison of pre-test and post-test knowledge of nurses regarding rtPA administration *n*=100

	Mean	SD	*t*	df	*P*-value
Pre-test	17.2	3.7	24.3	99	0.000
Post-test	30.4	3.7			

[Level of significance *P*=0.05]

Table 4: Fisher's exact test for association of knowledge of nurses regarding rtPA administration with their demographic variables *n*=100

Demographic variable		Knowledge		*P*-value
		Poor	Average	
Age	21–30 years	12	33	0.534
	31–40 years	8	21	
	41–50 years	8	11	
	Above 50 years	3	4	
Professional qualification	GNM	13	30	0.982
	B.Sc. Nursing	10	21	
	Post Basic B.Sc. nursing	8	16	
	M.Sc. Nursing	0	2	

Table 5: Demographic variable *n*=100

Demographic variable		Knowledge		*P*-value
		Poor	Average	
Gender	Male	13	16	0.049
	Female	18	53	
Years of experience	More than 6 months–5 years	14	26	0.198
	6–10 years	5	25	
	11–15 years	8	12	
	>15 years	4	6	

29% of them were males and 71% of them were females. About 40% of them had 6 months–5 years of experience, 30% of them had 6–10 years of experience, 20% of them had 11–15 years of experience, and 10% of them had more than 15 years of experience.

Section II: Analysis of data related to the knowledge of staff nurses regarding rtPA administration.

In pre-test, the majority of 69% of the nurses had average knowledge (score 16–30) and 31% of them had poor knowledge (score 0–15) regarding rtPA administration.

Section III: Analysis of data related to knowledge of nurses regarding before and after rtPA administration.

In pre-test, the majority of 69% of the nurses had average knowledge (score 16–30) and 31% of them had poor knowledge (score 0–15) regarding rtPA administration. In post-test, 52% of them had average knowledge (score 16–30) and 48% of them had good knowledge (score 31–46) regarding rtPA administration. This indicates that the knowledge of the nurses improved after protocol regarding rtPA administration. Researcher applied paired *t*-test for comparison of pre-test and post-test knowledge of nurses regarding rtPA administration. Average pre-test knowledge score was 17.2 which increased to 30.4 in post-test. *t*-value for this comparison was 24.3 with 99° of freedom. Corresponding $P = 0.000$, which is small (<0.05), the null hypothesis is rejected and accept the alternative hypothesis. Hence, protocol regarding rtPA administration was found to be significantly effective in improving the knowledge and practice of nurses.

Section IV: Analysis of data related to association of knowledge of nurses regarding rtPA administration with their demographic variables.

1. Fisher's exact test is used to find the association of knowledge of staff nurses regarding rtPA administration with their demographic variables and since *P*-value corresponding to gender was 0.049, which is small (<0.05), the demographic variable gender was found to have significant association with knowledge of staff nurses regarding rtPA administration.
2. Fisher's exact test is used to find the association of knowledge of staff nurses regarding rtPA administration with their demographic variables.
3. Since null hypothesis is rejected, gender was found to have significant association with knowledge of staff nurses regarding rtPA administration.

By 2020, heart disease will become the leading cause of both death and disability worldwide.[9] Compared to the year 2000, the number of years of productive life lost to cardiovascular disease will be increasing in 2030 by 20% in USA, 30% in Portugal, 57% in China, 64% in Brazil, and 95% in India. And by 2040, women in countries such as Russia, Brazil, India, China, and South Africa will represent higher proportion of deaths due to cardiovascular disease than men. The WHO predicts 11.1 million deaths will occur from coronary heart disease by 2020.[10]

Stroke is the most common life-threatening neurological disorder and the most important single cause of disability. According to the World Health Organization estimates for the year 2020, stroke will stay as the second leading cause of death along with ischemic heart disease, both in developing and developed countries.[11]

Thrombolytic therapy is one of the most common medical management adopted in such forms of cardiac disorders caused by occlusion of blood vessels by a thrombus. Thrombolytic therapy is the use of drugs to break up or dissolve blood clots, which are the main cause of both heart attacks and stroke.[12] Thrombolytic therapy uses drugs called thrombolytic agents, such as alteplase (Activase),

anistreplase (Eminase), streptokinase (Streptase, and Kabikinase), urokinase (Abbokinase), and t-PA to dissolve clots. When a blood clot forms in a blood vessel, it may cutoff or severely reduce blood flow to parts of the body that is served by that blood vessel. This can cause serious damage to those parts of the body. If the clot forms in an artery that supplies blood to the heart, for example, it can cause an attack. A clot that cutoff blood to the brain can cause a stroke. Thrombolytic therapy is used to dissolve blood clots that could cause serious, and possibly life-threatening, damage if they are not removed. Research suggests that when used to treat stroke, thrombolytic therapy can prevent or reverse paralysis and other problems that otherwise might result.[13]

Conclusion

The overall experience of conducting this study was satisfying one, as there was good cooperation from ICU staff nurses. The study was a new learning experience for the investigator. The result of the present study shows that there is significant gap in the pre-test and post-test knowledge score, i.e., (17.2) (30.4) on recombinant t-PA administration among intensive care unit nurses and hence there is need for a standard protocol for the improvement of knowledge and practice regarding recombinant t-PA administration. Null hypothesis rejected and alternative hypothesis are accepted there is significant change in before and implementation of protocol.

Limitations of the study

1. The scope of this study is up to the development of standard protocol, this study does not cover the implementation of the prepared protocol.
2. The study is limited to only register staff nurses, who are working in selected hospitals.
3. The sample size is limited 100 subjects.

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