Effectiveness of Structured Teaching Programme (STP) on Knowledge Regarding Stroke Rehabilitation among Staff Nurses Serving in Tertiary Care Hospital of Maharashtra State

Sonu K. Khandare

Department of Medical Surgical Nursing Dr. Panjabrao Deshmukh Nursing Institute
sonukhandare1994[at]gmail.com

Abstract: *Aim of the study: The study aims to find the effectiveness of structured teaching Programme (STP) on Knowledge Regarding stroke rehabilitation among staff nurses sevining in tertiary care hospital of Maharashtra. Objectives of study: Primary objective- To assess the effectiveness of STP on knowledge regarding Stroke rehabilitation among staff nurses serving in tertiary care hospital of Maharashtra Secondary objectives- 1. To assess the knowledge of Staff nurses regarding stroke rehabilitation among staff nurses serving in tertiary care hospital Maharashtra.2. To Find out The Effectiveness of STP on knowledge regarding stroke rehabilitation among staff nurses serving in tertiary care hospital 3. To associate between posttest knowledge score on stroke rehabilitation and selected demographic variables of staff nurses serving in tertiary care hospital. Method: a pre-experimental one group pretest posttest design and quantitative approach was carried out on 80 staff nurses selected by convenient sampling technique to test effectiveness of structured teaching programme. The data was collected by using structured questionnaire consists of 30 items. Results: The presents study evaluates and found that demographic variables, majority 62.5% of them were in the age group of 21-30 years, majority of staff nurses 75% of them were females, majority 72.5% of the staff nurses were educated up to GNM, majority (46.3%) of the staff nurses had working experience of 0-5 years, majority (17.5) % of the staff nurses had information from mass media. Interpretation and conclusion: The data were analysed by applying descriptive and inferential statistics. The result of the study indicated that after intervention there was an improvement in the knowledge and they gain good knowledge about stroke rehabilitation. Analysis data shows that highly significance difference found between the pre -test and post- test knowledge scores at the level of (P<0.05). The hypothesis is proved and accepted.*

Keywords: Structured Teaching Programme, STP, Stroke Rehabilitation, Staff Nurse, Knowledge

1. Introduction

Developing countries like India are facing a double burden of communicable and non-communicable diseases. Stroke is one of the leading causes of death and disability in India.[1] The sudden death of brain cells due to lack of oxygen, caused by blockage of blood flow or rupture of an artery to the brain..[2] The main risk factor for stroke is high blood pressure. Other risk factors include lifestyle, tobacco smoking, obesity, high blood cholesterol, diabetes mellitus,[3] Sudden loss of speech, weakness, or paralysis of one side of the body can be symptoms[2] Since early administration of tissue plasminogen activator is the most effective stroke treatment for patients as well as the rehabilitation. Knowledge about stroke among the public is poor, but can be increased through public educational campaigns.[4]

Rehabilitation is a crucial part of stroke recovery, and rehabilitation nursing can be one of the best services to enlist in recovering from a stroke.[5] Rehabilitation services are the primary mechanism by which functional recovery and the achievement of independence are promoted in patients with stroke.[6] Stroke rehabilitation is the process by which patients with disabling strokes undergo treatment to help them return to normal life as much as possible by regaining and relearning the skills of everyday living. Aims is to help the survivor understand and adapt to difficulties prevent secondary complications and educate family members to play a supporting role.[3]

A rehabilitation team is usually multidisciplinary as it involves staff with different skills working together to help the patient. These include nursing staff, physiotherapy, occupational therapy, speech and language therapy and usually a physician trained in rehabilitation medicine. Some teams may also include psychologist social worker and pharmacist [7] [7] Recovery will often involve specific therapies and support, such as physical therapy (PT) and occupational therapy (OT) and speech therapy are the cornerstone of rehabilitation process, but in many countries neurocognitive rehabilitation is used, too. Assistive technology such as a wheelchair walkers' canes and orthosis may be beneficial. Speech and language therapy are appropriate for patients with problems understanding speech or written words problems forming speech and problems with swallowing.[7]

2. Need for the Study

A majority (70%) of population of India lives in rural areas and is at high risk of morbidity and mortality from stroke because of lack of knowledge about the risk factors and access to preventive and curative care.[18] Globalization and industrialization witnessed over the last two decades have influenced life-styles of people particularly in developing countries. Stroke is a major non-communicable disease. It is the most common cause of mortality and a significant cause of adult disability. Stroke may also compromise cognitive, mood, functional abilities and quality-of-life. It also results in caregiver burden and economic stress at individual,

familial and national level.[8] According to the Global Burden of Diseases (GBD) study in 1990, stroke was the second leading cause of death worldwide. Subsequent efforts to update the GBD study reported nearly 5.87 million stroke deaths globally in 2010, as compared to 4.66 million in 1990. This indicated a 26 per cent increase in global stroke deaths during the past two decades. With the rising proportion of mortality, stroke still remains the second leading cause of death worldwide.[26]

Rehabilitation is an important and ongoing part of treatment. With the right assistance and the support of loved ones, rehabilitation to a normal quality of life is possible, depending on the severity of the stroke.[27]

3. Review of Literature

The estimated adjusted prevalence rate of stroke range, 84-262/100,000 in rural and 334-424/100,000 in urban areas.[2] The Prevalence of Stroke estimated 4.6 million approx. 1 in 59 or 1.69%. An annual incidence of Stroke is 600,000 annually including 500,000 new cases and 100,000 recurrences, approx. 1 in 453 or 0.22%.[34]

A longitudinal study was conducted to determine the risk factors of long-term survival after stroke. A total of 449 consecutive patients after acute stroke from 2 medical centers, within a 1-year period, were included. Dysphagia was confirmed with the water swallow test within the first week after stroke. A total of 424 patients were followed for 10 years, and the survival was 54.2%. dysphagia was not an independent determinant of post-stroke survival. These results suggest that differential treatment strategies should be used in the different stages of stroke.[41] An experimental study was conducted to assess effectiveness of self-instructional module on the improvement of knowledge of adults regarding prevention of stroke. The result showed that there was a significant improvement in knowledge of adults regarding prevention of stroke. Thus, investigator concluded that self-instructional module is a good method of conveying information to adults and it is very effective in order to gain knowledge.[65] A survey was conducted among hospital ward staff members using the Stroke Awareness Questionnaire, which was adapted for use among hospital staff to assess their knowledge of stroke symptoms, acute treatments, and hospital protocols for treatment of stroke. Thus, investigator concluded that the Hospital staff had adequate knowledge of stroke signs and symptoms; however, there was low awareness of thrombolysis therapy and its correct treatment time window among hospital staff. Targeted educational programmes among hospital staff regarding stroke are required to optimize acute stroke care.[64]

3.1 Assumption

1) Staff nurses may have some knowledge on stroke rehabilitation.
2) The demographic variables may influence on knowledge of staff nurses with regard stroke rehabilitation.
3) STP on stroke rehabilitation may enhance the knowledge of Staff nurses

3.2 Delimitations

The study was delimited to
1) Assessment of knowledge with regard to stroke rehabilitation.
2) 80 staff nurses.
3) Staff nurses serving in tertiary care hospital.

3.3 Hypothesis

- H1: There is a significant difference between pre-test and post-test knowledge scores on stroke rehabilitation among staff nurses.
- H2: There is a significant difference between post-test knowledge scores on stroke rehabilitation and selected demographic variables of staff nurses.

4. Methodology

Research approach: An experimental research approach was used for the study

Research design: Quantitative, pre-experimental one group pretest posttest design

Variables under study:
- Dependent Variable: - knowledge on Stroke rehabilitation
- Independent Variable: - Structured teaching programme on Stroke rehabilitation.

Accessible population Registered staff nurses available for the present research study were accessible population

Sample and sampling technique
Sample: Registered staff nurses serving in tertiary care hospitals of Maharashtra state were the samples for present study.
Sample size: Sample's size was 80 calculated based on sample size determination formula
Sampling technique: The convenient sampling technique was used to select the staff nurses serving in tertiary care hospital Maharashtra. As per the tentative schedule of data collection, the investigator has selected the staff nurses conveniently on first come first basis after informed consent.

Inclusion criteria
1) Staff nurses available at the time of data collection
2) Staff nurses give consent to participate in the study

Exclusion criteria
1) Those staff nurses who undergone certification courses and such type of training programs.
2) Those who are not registered to state nursing council.

Tool Preparation
Tool used for the research study was structured knowledge questionnaire on stroke rehabilitation. The tool was prepared after extensive review of literature search, consultation with experts, and based on the past experience of the investigator.

Development of tool:
The research instrument consists of two parts:

Part A- Demographic data: It is related to seeking information on demographic variable of housewives such as Age, gender, qualification, work experiences, Source of information.

Part B– Structured knowledge questionnaires: -
It is related multiple choice question (MCQ) on knowledge items of stroke rehabilitation which was used to assess the knowledge of staff nurses. This multiple-choice question (MCQ) has a total of 30 questions related to general knowledge on stroke, factor affecting stroke, management of stroke, knowledge on stroke rehabilitation. The SAQ consist of 30 questions with a total score of 30. Each question/ item had four options and the score for each right answer was 1 and wrong for answer 0 mark.

Validation of the tool: The Content validity of SAQ and STP were established in consultation with 10 experts from the field of Medical Surgical Nursing (n=7), MD Medicine (n=1) statistician (n=1), language expert (n=1) The suggestions of subject experts were taken into consideration and reframed the same.

Reliability: Data was collected from 8 staff nurses who were serving in selected tertiary care hospital (other than the main study area) to test reliability of SAQ. The Test re-test method was used where Karl Pearson's correlation coefficient was calculated and the SAQ was found to be reliable at **(r = 0.82).**

Feasibility of the study: The investigator conducted a Pilot study.

Pilot study: The pilot study was conducted from 18/10/2019 to 25/10/2019 after prior permission from concerned authority. Eight (08) staff nurses were selected using convenient sampling technique from selected tertiary care hospital of Maharashtra state. To assess the feasibility of the study and to decide the plan for analysis

Data Collection Procedure

The investigator has obtained formal permission from consent authorities in selected hospital, Maharashtra for the conduct research study. The inform consent was obtained from each staff nurses for their willingness to participate in the study and data will be kept confidential.

Pre-test: The investigator has visited to staff nurses and handed over the SAQ with instructions to handover after 30 minutes. They were requested to read the question one by one and put ($\sqrt{}$) mark on right option mentioned below each question. The doubts were clarified and collected backfilled in SAQ immediately after 30 minutes. However, the pre-test data was collected from 17th&18th December. Around, 80 Staff (shift wise morning 30sample and evening 10sample)

Intervention: On the same day of pre-test, the staff nurses (around 40 daily shifts wise) were requested to assemble in conference hall. The investigator made the patients comfortable with good seating arrangement, calm atmosphere, etc. And, the health teaching on stroke rehabilitation was presented through the power point

presentation around 45 minutes. During presentation, the doubts of staff nurses were clarified. And further, they were informed with regard to date and time of posttest. However, the address and contact numbers were collected from the staff nurses.

Post-test: The post test was conducted using same tool used for pre-test after 7 days of intervention i.e.24rd to 25th December 2019. After the data gathering process, the researcher thanked all the study samples as well as the authorities for their cooperation.

Plan for data analysis: - (1) Description of demographic characteristics of the staff nurses was computed by using frequency and percentage. (2) Mean, Standard deviation of pre and post- test knowledge scores was computed. (3) "t" test was applied to determine the significance of mean difference between mean pre-test and post- test knowledge scores. (4) Chi- square test was used to find the association of knowledge score with demographic variables and the findings were documented in tables, graphs and diagram.

Scoring mode: Score 1 was given to every correct answer. 0 was given to every wrong answer. Based on the percentage of scores, level of knowledge was graded as **Poor**- 6 to below **Average**- 7 to 12**, Good**- 13 to 18. **Very good-** 19 to 24, **Excellent –** 25 to 30

5. Results

Organization of the data: The collected data is tabulated, analyzed, organized and presented under the following sections:

Section I:

Table No 1.1: Distribution of staff nurses according to their demographic variables, n=80

Demographic Variables	No. of staff nurse	Percentage (%)
Age(yrs)		
21-30 yrs	50	62.5%
31-40 yrs	20	25%
41-50 yrs	8	10%
≥51 yrs	2	2.5%
Gender		
Male	20	25%
Female	60	75%
Qualification		
GNM	58	72.5%
BSc(N)	13	16.25%
PBBSc(N)	9	11.25%
MSc(N) & above	0	0
Work experiences		
0 to 5 yrs.	37	46.25%
6 to 10 yrs.	20	25%
11 to 15 yrs.	12	15%
≥16 yrs.	11	13.75%
Source of information		
Mass Media	14	17.5%
In Service Education	6	7.5%
Journal	35	43.75%
Books	14	17.5%

Section II: Assessment of knowledge regarding stroke rehabilitation among staff nurses before intervention

Table 1.2: Percentage distribution and Mean and standard deviation of knowledge on stroke rehabilitation among staff nurses before intervention, *n=80*

Sr. no.	Level of knowledge	No of housewives	Percentage Of knowledge	Mean	SD
1	Excellent	2	2.5%	26.00	-
2	Very Good	15	18.7%	2.46	1.24
3	Good	33	41.2%	15.66	1.49
4	Average	26	32%	10.23	1.63
5	Poor	4	5%	6.00	-
	Overall	80	48.5%	48.5%	14.57

Table 1.3: Area wise percentage distribution and Area wise Mean & Standard deviation of knowledge on stroke rehabilitation among staff nurses before intervention, *n=80*

S. No	Area	Item	Percentage of knowledge	Mean	SD
1	General information on stroke	4	68%	2.72	1.26
2	Factor influencing stroke	4	62.5%	2.50	1.25
3	Management of stroke	4	41.2%	1.65	1.27
4	Knowledge on stroke rehabilitation	18	42.7%	7.70	3.44
	Overall	30	48.5%	14.57	4.72

Section III: Assessment of knowledge on stroke rehabilitation among staff nurses after intervention

Table 1.4: Percentage wise distribution of knowledge on stroke rehabilitation among staff nurses after intervention. *n=80*

S. No	Level of knowledge	Pre-test		Post-test		Difference in Percentage
		Frequency	Percentage	Frequency	Percentage	
1	Excellent	2	2.5%	36	45%	+42.5%
2	Very good	15	18.7%	40	50%	+31.3%
3	Good	33	41.2%	4	5%	_36.2%
4	Average	26	32%	-	-	+32.5%
5	Poor	4	5%	-	-	+5%
	Overall	80	48.5%	80	79.5	31%

Table 1.5: Mean SD & Mean percentage of knowledge on stroke rehabilitation among staff nurses after intervention, *n=80*

Sr. No	Level of Knowledge	Pretest		Posttest		Difference in mean %	
		Mean± SD	Mean%	Mean± SD	Mean%	Mean± SD	Mean%
1	Excellent	26.00±0.00	20%	27.50±0.71	-	0.25 ±1.2	+20%
2	Very good	20.46±1.24	34.1%	25.21±2.22	-	26.00±0.00	+34%
3	Good	15.66±1.49	52.2%	23.52±2.69	59.1%	26.00±0.00	+6.9%
4	Average	10.23±1.63	68.2%	23.12±2.79	74.4 %	26.00±0.00	+6.2%
5	Poor	6.00±0.00	86%	25.00±2.94	87%	26.00±0.00	+1%
	Overall	14.57±4.72	48.5	23.86±2.74	79.5 %	9.29±1.98	31%

Table 1.6: Area wise percentage distribution, Mean SD & % of knowledge on stroke rehabilitation among staff nurses after intervention, *n=80*

S. No	Area wise percentage distribution				Areas wise Mean SD & %					
					Pretest		Post-test		Difference in mean %	
	Areas	Item	Pre-test %	Post-test %	Difference in %	Mean ± SD	Mean %	Mean ± SD	Mean %	Mean± SD	Mean%
1	General information on stroke	4	68%	87.5%	+19.4%	2.72±1.26	68%	3.50±0.71	87.5%	0.78±0.55	19.5%
2	Factor influencing stroke	4	62.5%	85.6%	+23.1%	2.50±1.25	62.5%	3.42±0.77	85.6%	0.92±0.48	23.1%
3	Management of stroke	4	41.2%	75.6%	+34.1%	1.65±1.27	41.2%	3.02±0.91	75.6%	1.37±0.36	34.4%
4	Knowledge on stroke rehabilitation	18	42.7%	77%	+34.3%	7.70±3.44	42.7%	13.86±2.51	77%	6.16±0.93	34.3%
	Overall	**30**	**48.5%**	**79.5%**	**+31%**	14.57±4.72	48.5%	23.86±2.74	79.5%	9.29±1.98	31%

Section IV: Effectiveness of STP on stroke rehabilitation among staff nurses after intervention

Table 1.7: Area wise effectiveness of STP on stroke rehabilitation among staff nurses, *n=80*

Sr. No.	Area of knowledge	Pre test Mean ±SD	Post test Mean ±SD	t value	p value
1	General information on stroke	2.72 ±1.26	3.50±0.71	4.78	0.0001 S. p<0.05
2	Factor influencing stroke	2.50±1.25	3.42±0.77	5.61	0.0001 S. p<0.05
3	Management of stroke	1.65±1.27	3.02 ±0.91	7.84	0.0001 S. p<0.05
4	Knowledge on stroke rehabilitation	7.70±3.44	13.86± 2.51	12.91	0.0001 S. p<0.05
	Overall	14.57±4.72	23.86±2.74	17.37	0.0001 S. p<0.05

Table 1.8: Overall Effectiveness of STP on Stroke rehabilitation among staff nurses, *n=80*

Overall	Mea n	SD	Mean Difference	t-value	p-value
Pre-Test	14.57	4.72	9.28±4.78	17.37	0.0001 S,p<0.05
Post Test	23.86	2.74			

With Student's paired' test applied at 5% level of significance; 't' value was found to be 17.37 whereas the corresponding p value was 0.0001 which is statistically highly significant. Hence, it is interpreted that the STP was effective in improving the knowledge of staff nurses regarding stroke rehabilitation and the Research Hypothesis H1 is accepted.

Section V: Association between posttest knowledge score stroke rehabilitation and demographic variables of staff nurses.

Table 1.9: Association of posttest knowledge score on stroke rehabilitation among staff nurses with their demographic variables, *n*=80

		No. of staff nurse	Mean posttest knowledge score	F-value	p-value
Age (years)	21-30 yrs	50	23.74±2.51	0.23	0.87 NS,p>0.05
	31-40 yrs	20	23.85±3.34		
	41-50 yrs	8	24.62±3.06		
	≥51 yrs	2	24±0		
Gender	Male	20	23.45±2.87	0.77	0.44 NS,p>0.05
	Female	60	24±2.70		
Qualification	GNM	58	23.86±2.69	0.007	0.93 NS, p>0.05
	BSc(N)	13	23.92±2.78		
	PBBSc(N)	9	23.77±3.30		
	MSc(N) & above	0	0±0		
Work experiences	0 to 5 yrs.	37	23.45±2.45	0.58	0.32 NS, p>0.05
	6 to 10 yrs.	20	24±3.17		
	11 to 15 yrs.	12	24.25±3.07		
	≥16 yrs.	11	24.54±2.58		
Source of information	Mass Media	14	23.21±3.33	0.95	0.41 NS, p>0.05
	In Service Education	25	23.76±2.43		
	Journal	6	22.83±4.07		
	Books	35	24.37±2.43		

Testing of Hypothesis

H1: There is a significant difference between pre-test and post-test knowledge score on Stroke rehabilitation among staff nurses.

In the present study, a significant difference (t=17.37; p=0.001 at 0.05level of significance) between pre-test and post-test knowledge score among staff nurses was observed and hence, it is inferred that the STP was effective in improving the knowledge of Staff nurses regarding stroke rehabilitation and the Research Hypothesis H1 Accepted.

H2: Significant- p<0.05

Hence, it is interpreted that the variable like **Age, gender, qualification, work experiences & source of information** of staff nurses is statistically not associated with their posttest level of knowledge score regarding stroke rehabilitation and Research hypothesis H2 is rejected & null hypothesis accepted.

6. Summary

- Majority (62.5%) of staff nurses were 21-30years
- Majority (75%) of staff nurses were females
- Majority of (72.5%) staff nurses were qualified with GNM nursing.
- Around (46.3%) of staff nurses had 0-5 years' work experience.
- Around (35%) of staff nurses were had information from books.
- Before intervention, overall knowledge among staff nurses was around 48.5%

- Before intervention, the staff nurses had mean knowledge score of 14.57 ± 4.72
- After intervention, overall knowledge among staff nurses was around 79.5%
- After intervention, the staff nurses had mean knowledge score of 23.86± 2.74
- There was a significant difference between mean pre-test and post test scores of knowledge among staff nurses (F=17.37 p>0.05).
- There was no significant association (F=0.23, p>0.05) between knowledge scores and age in years of staff nurses
- There was no significant association (F=0.77, p>0.05) between knowledge scores and gender of staff nurses
- There was no significant association (F=0.007, p>0.05) between knowledge scores and Qualification of staff nurses
- There was no significant association (F=0.58, p>0.05) between knowledge scores and work experience of staff nurses
- There was no significant association (F=0.95, p>0.05) between knowledge scores and source of information of staff nurses

7. Conclusion

Around 80 staff nurses were selected by conveniently sampling method working in tertiary care hospital. To assess the knowledge after teaching on stroke rehabilitation of urban Maharashtra. The SAQ was used before & after teaching. The result shows that significant differences in "t" value (t=17.37, p<0.0001). the study findings revealed that

the instructional method like STP are useful study among staff nurses. Therefore, the structured teaching program as a instructional method is on stroke rehabilitation among staff nurses serving tertiary care hospital.

8. Recommendations

The present study recommendations the following in different areas –
1) A similar study can be done on large scale
2) Comparative study can be undertaken to find out the difference in knowledge among staff nurses serving in urban and rural hospitals/government or private hospital.
3) A similar study can be undertaken on domains of practice on stroke rehabilitation.
4) A similar study can be conducted among care giver.
5) Recommended to conduct true experimental design.

9. Limitation

The Following were the limitations of the study, it includes: -
1) The study was limited to the domain of knowledge
2) The study was limited to selected private multispeciality hospital at urban region of Maharashtra state only
3) The study was limited to the 80 staff nurses those who were registered with state nursing council.
4) The study was limited to staff nurses available during the data collection period only
5) The Data collection period was limited for 2 weeks as it was cross sectional approach.
6) The study was limited to conveniently sampling technique.

10. Acknowledgement

References

[1] Pandian, J. and Sudhan, P. (2013). Stroke Epidemiology and Stroke Care Services in India. *Journal of Stroke*, [online] 15(3), p.128. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3859004/ [Accessed 5 Nov. 2019].
[2] MedicineNet. (2019). *Definition of Stroke*. [online] Available at: https://www.medicinenet.com/script/main/art.asp?artic lekey=9791 [Accessed 5 Nov. 2019].
[3] En.wikipedia.org. (2019). *Stroke*. [online] Available at: https://en.wikipedia.org/wiki/Stroke [Accessed 5 Nov. 2019].
[4] Pandian, J., Jaison, A., Deepak, S., Kalra, G., Shamsher, S., Lincoln, D. and Abraham, G. (2005). Public Awareness of Warning Symptoms, Risk Factors, and Treatment of Stroke in Northwest India. *Stroke*, 36(3), pp.644-648.
[5] Saebo. (2019). *A Simplified Guide To Rehabilitation Nursing For Strokes | Saebo*. [online] Available at: https://www.saebo.com/simplified-guide-rehabilitation-nursing-strokes/ [Accessed 5 Nov. 2019].
[6] Winstein, C., Stein, J., Arena, R., Bates, B., Cherney, L., Cramer, S., Deruyter, F., Eng, J., Fisher, B., Harvey, R., Lang, C., MacKay-Lyons, M., Ottenbacher, K., Pugh, S., Reeves, M., Richards, L., Stiers,
[7] W. and Zorowitz, R. (2016). Guidelines for Adult Stroke Rehabilitation and Recovery. *Stroke*, [online] 47(6). Available at: http://stroke.ahajournals.org.
[8] A text book of medical surgical nursing javed Ansari farukh khan pee vee page 371-372
[9] Jha et al. RGI-CGHR Prospective Study Collaborators. Prospective study of one million deaths in India: rationale, design, and validation results. PLoS Med. 2006;3:e18. doi: 10.1371/journal.pmed.0030018
[10] Mozaffarian D, Benjamin E. Heart Disease and Stroke Statistics—2015 Update. Circulation [Internet]. 2015

[cited 26 March 2019];131(4). Available from: https://www.ahajournals.org/doi/10.1161/cir.0000000000000152

[11] Kamalakannan S, Gudlavalleti AS, Gudlavalleti VS, Goenka S, Kuper H. Incidence & prevalence of stroke in India: A systematic review. Indian J Med Res [serial online] 2017 [cited 2019 Nov 5];146:175-85. Available from: http://www.ijmr.org.in/text.asp?2017/146/2/175/221096

[12] [Internet]. 2019 [cited 26 March 2019]. Available from: https://www.rightdiagnosis .com

[13] Han D, Pan S, Chen S, Lie S, Lien I, Wang T. Predictors of long-term survival after stroke in Taiwan. Journal of Rehabilitation Medicine. 2008;40(10):844-849.

[14] Thakur Disha "A study to assess effectiveness of self-instructional module on knowledge regarding prevention of stroke among school teachers in selected schools of Vapi" imperial journal of interdisciplinary research (IJIR) 2(10) 2016 PP:917-923 Available online: http://www.onlinejournal.in