ABSTRACT

Stroke is one of the leading causes of mortality and morbidity worldwide. Each year approximately 20 million people suffer from stroke and 5 million do not survive\(^5\). In the developing countries about 85\% of global deaths occur due to stroke\(^6\). Stroke is also a leading cause of functional impairments, permanent disability (15\% - 30\%) with 20\% of survivors requiring institutional care up to 3 months\(^7\). Stroke is a life-changing event that affects not only the individual who may be disabled but also their family members and caregivers. Utility analyses show that a major stroke is viewed as being worse than death. During these days effective screening, evaluation, and management strategies for stroke are well established in high-income countries, but these facilities have still not been yet fully implemented in India\(^8\).

Objectives:
This study aims at assessing the effect of Sensory Stimulation Program on neurological status of patients with stroke

Methods and Materials:
A Quantitative Research Approach was adopted for the study with Quasi- experimental pre-test post-test control group design. The study was conducted in selected Hospitals of Pune City. Non-probability purposive sampling technique was used to obtain 100 samples (50 patients with stroke in each experimental and control group). Hemispheric stroke scale was used to assess the neurological status and Barthel index scale was used to assess the dependency status of the patients with stroke. Physical examination, direct observation and record analysis were the technique of data collection. Neurological status was assessed on 1\(^{st}\) day from both the groups, followed by administration of sensory stimulation program to the experimental group only for 28 days, twice daily. Neurological assessment was done on the 7\(^{th}\), 21\(^{st}\), 42\(^{nd}\), 63\(^{rd}\) and 84\(^{th}\) day in both Experimental and Control group.

Results:
According to hemispheric stroke scale, initially on 7\(^{th}\) day the experimental and control group didn’t show any change in neurological status. But in the following observations on 21\(^{st}\) day (t\(_{49}\)=30.1, p= <0.05), 42\(^{nd}\) day (t\(_{49}\)=39.5, , p= <0.05), 63\(^{rd}\) day (t\(_{49}\)=45, p= <0.05),and 84\(^{th}\) day (t\(_{49}\)=55.8, p= <0.05) there is statistically significant changes were observed in neurological
status in the experimental group. The average dependency score was 0, 5.7, 37.3, 55.4, 64.2 and 74.9 on day 1, 7, 21, 42, 63, and on 84 respectively as measured by Barthel Index Scale. Statistically significant changes were observed in dependency status of the patients in Experimental group. [day 7 (t (49)=8.7, p= <0.05), day 21 (t (49)=25.3, p= <0.05), day 42 (t (49)=46.4, p= <0.05), day 63 (t (49)=63.3, p= <0.05) and day 84 (t (49)=44.7, p= <0.05) respectively. As the corresponding p-values were small (less than 0.05), this shows that the obtained mean difference was a true difference and not by chance.

**Conclusion:**

- Comparing the neurological status based on both hemispheric stroke scale and Barthel index scale, it is found that the overall neurological score in experimental group was significantly higher than that in control group after the implementation of SSP to experimental group. Corresponding p-values were small (less than 0.05), thus the null hypothesis was rejected. Hence it proves that SSP was significantly effective in improving the neurological status of patients with stroke.

**Key words:** Sensory Stimulation Programme, Neurological Status, Patients with Stroke

**Rationale of the study:**

Strokes is a leading cause of death and disability worldwide, being the third most common cause of mortality in the USA, after heart attacks and cancer. Epidemiological studies help to determine the prevalence, distribution and risk factors that are necessary to streamline health services for prevention and treatment of the disease.

Stroke is becoming an important cause of premature death and disability in low-income and middle-income countries like India, largely driven by demographic changes and enhanced by the increasing prevalence of the key modifiable risk factors. As a result, the developing countries are exposed to a double burden of both communicable and non-communicable diseases. The poor are increasingly affected by stroke, because of both the changing population exposures to risk factors and, most tragically, not being able to afford the high cost for stroke care. Majority of the stroke survivors continue to live with disabilities, and the costs of on-going
rehabilitation and long term-care are largely undertaken by the family members, which impoverish their families.

After a stroke, people often experience emotional and behavioral changes. This is because stroke affects the brain, and our brain controls our behavior and emotions. Injury from a stroke may make a person forgetful, careless, irritable or confused. Stroke survivors may also feel anxiety, anger or depression. A stroke incident leaves one in a situation involving new and stressful thoughts and emotions concerning one’s present and future life. Many who have suffered a stroke remain dependent on others and are in need of health care.

It is the nursing care which helps the stroke patients once they are out of critical condition. An accurate rehabilitation plan is required to overcome the disability of stroke. Nurses are already dealing with stroke patients to give maximum care with new technique and rehabilitation process. Still there are very few studies to prove effect Multi Sensory Stimulation in better outcome of stroke patients. Sensory stimulation is cost effective and easy to perform in home setup by the care givers also. Keeping these points in mind the Investigator has decided to do a study on this topic.

**Objectives of the study:**

1. To assess the neurological status of the patients with stroke in experimental and control group before the implementation of Sensory Stimulation Program.
2. To assess the neurological status of the patients with stroke in experimental group after the implementation of SSP; and control group.
3. To assess the effectiveness of SSP on neurological status of patients with stroke.
4. To associate the findings with selected demographic variables.

**HYPOTHESIS:**

\( H_{01} \) – There is no difference in neurological status of the patients with stroke after the implementation of sensory stimulation program as measured by Hemispheric Stroke Scale at 0.05 level of significance.

\( H_{02} \) -- There is no difference in dependence level of the patients with stroke after the implementation of sensory stimulation program as measured by Barthel Index scale at 0.05 level of significance.
There is no association between demographic variables with the neurological status of patients with stroke as measured by Fisher’s exact test at 0.05 level of significance based on hemispheric stroke scale.

**A Survey of the work done in Research area under following headings:**

1. Literature related to stroke in general.
2. Literature related to the Multi Sensory Stimulation
3. Literature related to the Auditory Stimulation
4. Literature related to the Mirror Therapy
5. Literature related to the Olfactory Stimulation
6. Literature related to the Gustatory Stimulation
7. Literature related to the neurological outcome of stroke patients in general

Literature reviews were taken from Central and State Government reports and studies. Also the studies done by NGO’s, Peer reviewed journals, Periodicals, Bulletin, Newspaper articles, Thesis and Dissertations.

**Research Methodology**

A Quantitative Research Approach was adopted for the study with Quasi- experimental pre-test post-test control group design. The independent variable of the study was Sensory Stimulation Program and dependent variables were neurological status of patients with stroke.

The study was conducted in Bharati Hospital and Research Centre Pune, Rao Nursing Home Satara Road Pune, and Shashwat Nursing Home Kothrud Pune. Non-probability purposive sampling technique was used to obtain an adequate size (100) of sample subjects, and they were assigned to the groups (Control & Experimental). The sample comprised of 50 patients with stroke in each Experimental and Control group.

To obtain necessary data for the study, the tools are selected, modified and used for data collection. Tools selected for study were Hemispheric stroke scale and Barthel Index Scale. Hemispheric Stroke Scale comprised of 22 neurological assessment points under main headings of GCS, Language, Other Cortical Functions and Cranial Nerves, Motor Functions, and Sensory. Barthel index scale comprises of 10 points under the main headings feeding, bathing, grooming, dressing, bowel, bladder, toilet use, transfer from bed to chair and back, mobility, and stairs.
Validity and Reliability:
The content validity of the data collection tools were established by 25 experts who included nursing experts from all fields Neurology, Physiotherapy, Ayurveda, Statistician and Nursing. Internal consistency reliability of the Hemispheric Stroke Scale and Barthel Index Scale was assessed using Inter-Rater method. Cohen’s Kappa was found to be 0.98. Thus, the tools with these sections were found to be reliable.

Pilot Study:

A pilot study was conducted from 15th August 2015 to 15th April 2016 to check the feasibility of the study in Krishna General Hospital, Pune.

Final Data Collection:

The final data were collected from April 2016 to June 2017 in Bharati Hospital and Research Centre, Pune, Shashwat Hospital Pune and Rao Nursing Home, Pune. Neurological status was assessed before implementation of SSP once the patients are out of emergency and that was the 1st day assessment of both experimental and control groups. Following this, the sensory stimulation program was given only to experimental group for 28 days twice daily by Researcher, and relative according to the set protocol of the study. Neurological status was assessed on the 7th, 21st, 42nd, 63rd and 84th day of both Experimental and Control group, using Hemispheric Stroke Scale and Barthel Index Scale.

Major Findings of the Study:

1. A. Findings regarding sample characteristics:-

- Majority of the samples in experimental and control group were between 51-70 years i.e. 68.0% and 66.0% respectively. Age is considered as a risk factor for many vascular diseases and the same fact is depicted in this study findings also.
- Majority of the samples i.e. 84% in control group and 54% in experimental group were male. According to Indian scenario, many people found with habits like smoking, alcohol consumption and tobacco chewing are males. This may be the reason that male suffer from vascular diseases more frequently which Researcher had found in her study also.
Majority of the samples in experimental group 52% and in control group 76% were unemployed. These findings may be related to age factor as the maximum samples in the study were above 50 years of age and same had retired from jobs.

Majority of the samples in experimental group majority of the samples i.e 64 % of them earned monthly family income Rs.15001-25000. In control group majority of the samples i.e 76 % were having the monthly income of Rs 5000-15000. The monthly income had not played an important role in this study. But it is observed by the Researcher that those who are economically sound have positive attitude in getting well soon and hence were very supportive.

Majority of patients in both experimental and control group i.e. 88% in control group and 66.0% in the experimental group were literate. Researcher has found that there was good support, co-operation and understanding in families of samples with high literacy.

Majority of patients in control group i.e 78% and in experimental group 52% belonged to the joint family. According to Indian culture the old people prefer to stay in a joint family. This is strongly found in this study. Even it is observed during interventional period that the patients in a joint family have shown more interest to have treatment and wanted to get well soon.

Except 2 samples in control group, all 98 samples in the study were having single or multiple habits i.e. 26% in control group and 52% in the experimental group are having the habit of chewing tobacco, 20% in control group and 6% in the experimental group are having both the habits of smoking and alcohol, 16% of patients in the experimental group are smokers and tobacco users. 26% of patients in the experimental group are having the habit of smoking. Many researchers have shown that smoking and using tobacco is major risk factors for vascular and coronary artery diseases. The findings in this study also depict that habits like smoking and chewing tobacco is a major risk factor for stroke.

The data in the study depict that majority of samples were having moderate physical activity i.e. in Experimental and Control group 70% and 50% respectively. Sedentary life style is again a risk factor for vascular diseases and in this study researcher also has seen this fact.

The data depicted that majority of patients in both the group i.e. 70% in control group and 58% in the experimental group were doing 1 to 3 hours of exercise per week before they had
stroke attack. The data shows that majority of samples were neither very active (>3 hours exercise) or inactive (< 1 hour exercise per week). These findings reveal that as the age increases physical activity becomes less.

B. Findings regarding clinical characteristics of sample:

- The data proved that majority of samples in study were with right sided stroke. In the experimental group 50% of them had a right-sided stroke and in control group, 56% of them had a right-sided stroke. It is observed during the study that the right sided stroke patients were more disabled, may be because the left side of the brain parts have important functions like analytic thought, language, logic, reasoning, number skills etc.

- Majority of the patients with stroke in the study i.e. 88% in control group and 74% in the experimental group were obese. As obesity is a major risk factor for many life style diseases researcher had included in this study.

- Majority of patients with stroke in both the groups i.e. 68% in control group and 78% in the experimental group had a cholesterol level between 200mg/dl -250mg/dl which is considered as high. High cholesterol or hyperlipidemia causes plaque formation in the blood vessels which cause narrowing of the blood vessels. These plaques are responsible for thrombus formation and cause diseases of the vascular system. Study findings also depict the fact that high cholesterol is one of the risk factor for stroke

- Vascular risk factors included in the clinical characteristics are Hypertension, Diabetes mellitus, Hypercholesterolemia, Coronary artery diseases. In experimental group 52% of patients had Hypertension, Hypercholesterolemia, and Coronary artery disease, 28% of samples had Hypertension, Diabetes mellitus, Hypercholesterolemia, Coronary artery disease. In control group, 26% of them had Hypertension, Diabetes mellitus, Hypercholesterolemia; 18% of them had Hypertension, Diabetes mellitus, Hypercholesterolemia, Coronary artery disease. The data in this study also proves the known factor that, as many as vascular risk factors there is more chances to suffer with stroke attack. All the patients with stroke in the study were having more than one vascular risk factors.

- The patients with stroke included in the study were with right and or left Anterior Cerebral Artery Infarct or Hemorrhage, Posterior Cerebral Artery Infarct or Hemorrhage, Right And
Or Left Middle Cerebral Artery Infarct Or Hemorrhage, any other cerebral artery infarct or hemorrhage. In experimental group 46% samples were involved with the left middle cerebral arterial territory, 26% samples were involved in Anterior cerebral artery-right and 22% were involved with the right middle cerebral arterial territory. In control group also 38% patients the ailing part was middle cerebral artery, 28% were involved with left middle cerebral artery, 22% of them had anterior cerebral artery-left. The present data depicts that maximum samples in this study were with middle cerebral artery infarct. During literature search the Researcher found that middle cerebral artery the largest cerebral artery was commonly affected by stroke.

- Majority of patients with stroke in both the group i.e. 62% in both experimental and control group were having an ischemic stroke. While working in clinical area the Researcher has observed that almost 80% strokes were with ischemic stroke. Even during literature review it was found that the incidence of ischemic stroke was more than hemorrhagic stroke.

2. Findings related to the neurological status of patients with stroke in experimental and control group before the implementation of Sensory Stimulation Program.

- The data shows that all the patients with stroke i.e. 100% samples in both the groups were showing bad neurological status with a score >63 before the implementation of SSP. According to hemispheric stroke scale bad neurological status score is score more than 63. In this scale maximum score was 100 and as the score decreases the patients’ neurological condition improves. So score 0-42 is good neurological status, score 43-63 is satisfactory neurological status, and score >63 is bad neurological status. The score includes the assessment of GCS, Language, other cortical functions and cranial nerves, motor functions and sensory assessment.

- The data in the study shows that in experimental and control group, all of the patients had total dependence with a score of <20. This means they were not able to do any activities like feeding, bathing, grooming dressing, bowel and bladder activities, movements like walking, sitting etc independently. They were completely dependent on others. In this study Barthel Index scale was used to assess the activities of daily living of stroke patients which indirectly depict the neurological status of the patients. Maximum score of this scale is 100 and minimum score is 20. In this scale as patients condition improves the score increases.
The scale is categorized in 5 stages starting with total dependence (0-20), severe dependence (21-40), moderate dependence (41-60). Slight dependence (61-80), independence (81-100).

3. A. Findings related to the neurological status of patients with stroke based on hemispheric stroke scale in experimental and control group after the implementation of Sensory Stimulation Program only to the experimental group:-

- On day 7, even after sensory stimulation programme the neurological score remained same i.e. above 63 in both Experimental and Control group; all were recorded as bad neurological status. No improvement was seen in Language, other Cortical Functions and Cranial Nerves, Motor functions and Sensory assessment, except GCS.
- But on the 21st day, there was considerable improvement in the Experimental group which is seen in data where the score of 12% samples improved to satisfactory level from bad status.
- On 42nd day, in Experimental group, 90% patient’s neurological status improved to a satisfactory level and 2% patients achieved good neurological status. There was substantial improvement in the neurological score of patients in Experimental group.
- On 63rd day, the data in the diagram shows further improvement in the neurological status of patients. 30% patients showed good neurological status with a score of less than 42, 70% patients were in satisfactory neurological status with a score between 43-63. No patients were found in bad neurological status.
- On 84th day in the experimental group, 60% patients in good neurological status, and 40% with satisfactory neurological status with a very good improvement in Language, other cortical functions and cranial nerves, motor functions and sensory assessment.
- On the contrary at the interval and same period, the neurological status of the control group is also assessed and the data showed that there was slow and steady improvement in neurological status of patients in control group also. It may be a natural process of brain cells that is brain spasticity. It is observed that in control group till 21st day all the patients were in bad neurological status. After that there was a slow improvement in the neurological status of the patients. Still by 84th day the control group was able to reach the score between 63-43 i.e.
up to satisfactory level. No samples in control group were found in good neurological status till the 84th day.

- The above data shows that in this study there was a steady continuous recovery in the neurological status of patients with stroke, in both experimental and control group. The patients in the experimental group were showing better improvement in the neurological status. Recent research studies have shown that brain cells can recover very well with stimulation.

B. Findings related to the Dependence of the patients with stroke in Experimental and Control group after the implementation of SSP only to the Experimental group based on Barthel Index Scale:-

- All the patients with stroke in the study in both experimental and control group had total dependence status on day 7, based on Barthel index scale even after implementation of sensory stimulation programme for one week. No improvement was seen in activities like bathing, feeding, grooming, dressing, bowel and bladder care, and other daily routine movements.

- On 21st day, in Experimental group, 28% patients were able to perform some of the activities and their independence score improved from less than 20 to 40. So their dependence status also improved from total dependence to moderate dependence.

- On 42nd day, the percentage of patients in moderate dependence status increased to 72% and other 28 % patients achieved slight dependence with an increased score up to 80 out of 100. No patients in the experimental group were in total dependency status. They were able to perform maximum activities like bathing, feeding, grooming, dressing, bowel and bladder care, and other daily routine movements with assistance.

- On 63rd day, majority of the patients in experimental group were still in same status i.e. 52% of them had slight dependence status and 48% of them had moderate dependence status. There was no considerable improvement in score. Only the number of patients in slight dependence had increased from 28% to 52%.

- On day 84, the neurological status in the experimental group had improved considerably. 26% of them achieved independence status. They were able to perform maximum activities like bathing, feeding, grooming, dressing, bowel and bladder care, and other daily routine
movements with the help of some aids like walking stick. Other samples in experimental group were in moderate and slight dependence status. They are also able to perform their activities of daily living with minimal assistance.

- At the same time, the samples in control group also were showing slight improvement from the 21st day to 84th day. On 42nd day, only 44% patients were with moderate dependence. On the contrary in the experimental group the same day, the number of patients in that status was 72%. By the 84th day all samples in control group were able to achieve up to moderate dependence status only.

- No samples in control group were able to achieve slight or independent status till the 84th day of study. They were still dependent for their daily activities like bathing, feeding, grooming, dressing, bowel and bladder care, and other daily routine movements on others. Above data shows that there was a steady continuous recovery in dependence status of samples in study i.e. from total dependence state to independence state in both the groups. But those samples in the experimental group who had received Sensory Stimulation Programme have shown considerable speedy recovery and achieved slight dependence and total independent status. But the data in control group shows that all the patients in control group on 84th day had moderate dependence status.

4. A. Findings related to the effectiveness of Sensory Stimulation Programme on neurological status of the patients with stroke based on hemispheric stroke scale:

Paired t-test was applied by the Researcher for the effectiveness of Sensory Stimulation Programme on neurological status of patients with stroke in the experimental group based on hemispheric stroke scale. On first day the neurological score was high i.e. above 63 with a mean score 87.6 which indicates a bad neurological status. Sensory stimulation programme was introduced from the very first day after pre assessment. Continuous improvement was seen in the Experimental group which is proven by a considerable decrease in the neurological status score and its mean score. Average neurological status score after intervention were 84, 68.5, 53.9, 46.6 and 39.2 on day7, day21, day42, day63 and day 84 respectively. (Hemispheric Stroke Scale Score is in negative order in the tool). T values were 9.8, 30.1, 39.5, 45 and 55.8 respectively with 49 degrees of freedom. Corresponding p-values
were small (less than 0.05). This shows that the obtained mean difference was a true difference and not by chance. Therefore, the Researcher rejected the null hypothesis. This result indicated that SSP was found to be significantly effective in improving the neurological status of patients with stroke.

**B. Effectiveness of SSP on dependence status of the patients with stroke based on Barthel Index scale in the Experimental group:**

Researcher applied paired t-test to assess the effectiveness of SSP on dependence status of patients with stroke in the experimental group based on Barthel Index Scale. The dependence score on first day was less than 20 and all patients were in total dependence status. Sensory stimulation programme was introduced from the very first day after pre assessment. There was continuous improvement seen in the Experimental group which is proven by a considerable increase in dependence score, and its mean score which indicate that patient’s dependency status is improved to independent status. Average dependence scores were 5.7, 37.3, 55.4, 64.2 and 74.9 on day7, day21, day42, day63 and day 84 respectively. T values were 8.7, 25.3, 46.4, 63.3 and 44.7 respectively with 49 degrees of freedom. Corresponding p-values were small (less than 0.05), the null hypothesis is rejected. SSP was found to be significantly effective in improving the stroke patient’s dependence status to independent status.

**5. A. Findings related to comparison of effect on neurological status of the patients with stroke in experimental group with control group based on Hemispheric Stroke Scale**

Researcher applied two sample z-tests for the comparison of the effect on the neurological status of the patients with stroke in experimental and control group. Average effect in neurological status scores in the experimental group was 3.5, 19, 33.7, 41 and 48.3 on day7, day21, day42, day63 and day 84. Average effect in neurological status scores in control group were 0.5, 7.7, 16.4, 16 and 29.8 on day7, day21, day42, day63 and day 84. Z values were 5.2, 12.5, 16.2, 22.3 and 14.4 with 98 degrees of freedom. Corresponding p-values were small (less than 0.05), the null hypothesis is rejected. The effect in neurological scores in the experimental group was significantly higher than those in control group. SSP was found to be significantly effective in improving the neurological status of the patients with stroke.
B. Findings related to the comparison of the effect on the neurological status of the patients with stroke in the experimental group with control group based on Barthel Index Scale:-

The Researcher applied two sample z-test for the comparison of the effect on the dependence of the patients with stroke in experimental and control group. Average effect in dependence scores in the experimental group were 5.7, 37.3, 55.4, 62.4 and 74.9 on day7, day21, day42, day63 and day 84 respectively. Average effect in neurological status scores in control group were 3.1, 17.9, 36.4, 43.7 and 53.2 on day7, day21, day42, day63 and day 84 respectively. Z values were 2.7, 11, 9, 17.6 and 12.4 with 98 degrees of freedom. Corresponding p-values were small (less than 0.05), hence the null hypothesis is rejected. The effect in dependence scores in the experimental group was significantly higher than that in the control group. SSP was found to be significantly effective in improving the dependence of patients with stroke.

6. Findings related to association of demographic variables with neurological status of the patients with stroke:-

The findings of neurological status of all the patients in this study in both experimental and control group on 1st day was in bad status, hence it was not possible to do the association with demographic variables before intervention. So Researcher decided to associate the demographic variables with the findings of neurological status of post intervention i.e. from 7th day to 84th day only with the experimental group. The Researcher applied Fisher’s exact test for association between demographic variables and neurological status of the patients with stroke. The data proved that among all the demographic variables, only educational status had some association with neurological status with p value 0.032 which is less than 0.05. The corresponding p-values for age (0.440), gender (0.388), occupation (0.317), monthly family income (0.074), Family Type (0.248), habits (0.804), physical activities (1.00), exercise (0.573) were more than 0.05. So there is no significant association between age, gender, family type, family income, habits, physical activities, and exercise with the neurological status of patients with stroke. P-value corresponding to Educational status was small (less than 0.05), the Educational status of the patients with stroke was found to have a significant association with their neurological status. The literate patients were found more likely to have satisfactory neurological status as compared to the illiterate patients.
7. Findings related to association of clinical variables with neurological status of the patients with stroke:

The data in the study proved that the corresponding p-values for Side affected (0.773), Weight (0.798), Cholesterol level (1.000), Vascular risk factors (0.762), Cerebral arterial territory (1.000), Stroke Type (0.774) were more than 0.05. So there is no significant association between side affected, weight, cholesterol level, vascular risk factors, Cerebral arterial territory and stroke type with the neurological status of the patients with stroke.

CONCLUSIONS:

On the basis of the findings of the present study, the following conclusions were drawn: - Study analysis shows that there is a significant improvement in activities of daily living and satisfactory improvement in neurological status of stroke patients after intervention. Sensory Stimulation Programme is found to be effective in improving neurological status of the patients.

- According to Hemispheric Stroke Scale the samples in experimental group who received Sensory Stimulation Programme had shown better improvement in level of consciousness, language, motor function, sensory function and other cortical functions and cranial nerves than the control group who had not received sensory stimulation programme.

- According to Barthel Index Scale the samples in experimental group who had received Sensory Stimulation Programme were more independent in activities of daily living like feeding self, bathing, grooming, dressing, attending bowel and bladder, using toilet, transferring from bed to chair, and climbing stairs than those patients with stroke in control group who had not received Sensory Stimulation Programme.

Therefore the study can be concluded that sensory stimulation programme is effective in improving neurological status of patients with stroke. It helps them to be more independent to perform their activities of daily living. Stroke patients in the experimental group who were exposed to sensory stimulation programme had shown better improvement in following the instructions, in pronouncing words more clearly and improvement in visual field. SSP help the experimental group for better improvement in gaze, dysarthria, dysphagia, and visual construction.

Therefore Sensory Stimulation Programme is effective in improving the neurological status of the patients with stroke.