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"Evaluate The Effectiveness Of Structured Teaching Programmed On Knowledge Regarding Nerve Conduction Study (NCS) Among Staff Nurses In Selected Hospitals Of Udaipur City, Rajasthan".

Vishal Jain[1], Aakash Chavda[2], Janak Joshi.[3]
1(M.Sc. Nursing Geetanjali College of Nursing, Udaipur, Rajasthan, India.)
2(Associated professor & HOD, Dept. Of Medical Surgical Nursing, Geetanjali College of Nursing, Udaipur, Rajasthan, India.)
3(Assistant professor, Dept. Of, Medical Surgical Nursing, Geetanjali College of Nursing, Udaipur, Rajasthan, India.)
Corresponding Author: Vishal Jain

Abstract: *A pre experimental study to evaluate the effectiveness of structured teaching programme on knowledge regarding Nerve Conduction Study (NCS) among staff nurses in selected hospitals of Udaipur City, Rajasthan. The sample consisting of 120 staff nurses was selected by using convenient sampling technique. The tool comprised of structured self-administered questionnaire. The pretest was conducted and the structure teaching programme was administered. The post test was conducted after one week. The data obtained were analyzed by using descriptive and inferential statistics. The mean score of post-test knowledge 24.55 (81.83.%) was apparently higher than the mean score of pre-test knowledge 10.71 (35.7%), suggesting that the structure teaching programme was effective in increasing the knowledge of the staff nurses regarding Nerve Conduction Study (NCS). The mean difference 13.84 between pre-test and post-test knowledge score of the staff nurses was found to be significant.*

Key words: *effectiveness, structure teaching programme, staff nurses, nerve conduction study, one group pre – test post – test, per experimental study*

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I. Introduction

The nervous system is the part of a human that coordinates its actions by transmitting signals to and from different parts of its body. . In nervous system, it consists of two main parts, the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS consists of the brain and spinal cord. The PNS consists mainly of nerves, which are enclosed bundles of the long fibers or axons that connect the CNS to every other part of the body. Nerves that transmit signals from the brain are called motor or efferent nerves, while those nerves that transmit information from the body to the CNS are called sensory or afferent. Spinal nerves serve both functions and are called mixed nerves. The PNS is divided into the motor nervous system, autonomic nervous system, and sensory nervous system.

Somatic nerves mediate voluntary movement. The autonomic nervous system is further subdivided into the sympathetic and the parasympathetic nervous systems. The sympathetic nervous system is activated in cases of emergencies to mobilize energy, while the parasympathetic nervous system is activated when organisms are in a relaxed state. The enteric nervous system functions to control the gastrointestinal system. Both autonomic and enteric nervous systems function involuntarily. Nerves that exit from the cranium are called cranial nerves while those exiting from the spinal cord are called spinal nerves. The peripheral nervous system consists of 31 pairs of spinal nerves, 12 pairs of cranial nerves and autonomic nervous system.[1]

Autonomic nerve damage may produce the following symptoms are the inability to sense chest pain, such as angina or heart attack, too much sweating (known as hyperhidrosis) or too little sweating (known as anhidrosis), lightheadedness, dry eyes and mouth, constipation, bladder dysfunction, sexual dysfunction etc.

Motor nerves Damage may produce the following symptoms are a weakness, muscle atrophy, twitching, also known as fasciculation, paralysis etc.

Sensory nerve damage may produce the following symptoms are Pain, Sensitivity, Numbness, Tingling or prickling, Burning, Problems with positional awareness.[2]

In human body each and every sensation are perceived by nerve and when the nerves got damaged there is an investigation which measures the damages and dysfunction of nerve i.e. Nerve Conduction Study (NCS).

A nerve conduction velocity (NCV) test is used to assess nerve damage and dysfunction. Also known as a nerve conduction study, the procedure measures how quickly electrical signals move through your peripheral nerves. Your peripheral nerves are located outside of your brain and along your spinal cord. These nerves help you control your muscles and experience the senses. Healthy nerves send electrical signals more quickly and with greater strength than damaged nerves. The NVC test helps differentiate between an injury to the nerve fiber and an injury to the myelin sheath, the protective covering surrounding the nerve. It can also help your doctor tell the difference between a nerve disorder and a condition where a nerve injury has affected the muscles. Making these distinctions is important for proper diagnosis and determining your course of treatment.[3]

Nerve conduction velocity (NCV) is a common measurement made during this test. The term NCV often is used to mean the actual test, but this may be misleading, since velocity is only one measurement in the test suite.[4]

Nerve conduction velocity studies measure the conduction time and amplitude of electrical stimulation along two or more points of peripheral nerve using a cathode (negative electrode) and an anode (positive electrode).[5]

Find damage to the peripheral nervous system. This includes all the nerves that lead away from the brain and spinal cord. It also includes the smaller nerves that branch out from those nerves. This test is often used to help find nerve problems such as carpal tunnel syndrome or Guillain-Barré syndrome.[6]

There are more than 100 different types of nerve damage. The various types may have different symptoms and may require different types of treatment. It is estimated that about 20 million Americans suffers from peripheral nerve damage. This type of damage becomes increasingly common with age. Up to 70% of people with diabetes have some nerve damage. Nerve conduction velocity is often used along with an EMG to differentiate a nerve disorder from a muscle disorder. NCS detects a problem with the nerve whereas an EMG detects whether the muscle is functioning properly in response to the nerve's stimulus.

Guillain-Barré syndrome is a condition in which the body's immune system attacks part of the peripheral nervous system. The first symptoms may include weakness or tingling sensations in the legs. In Western countries, the number of new episodes per year has been estimated to be between 0.89 and 1.89 cases per 100,000 people. Children and young adults are less likely to be affected than the elderly: the risk increases by 20% for every decade of life. Men are more likely to develop Guillain–Barré syndrome than women; the relative risk for men is 1.78 compared to women.

The distribution of subtypes varies between countries. In Europe and the United States, 60–80% of people with Guillain–Barré syndrome have the demyelinating subtype, and a man affects only a small number (6–7%). In Asia and Central and South America, that proportion is significantly higher (30–65%). This may be related to the exposure to different kinds of infection, but also the genetic characteristics of that population. Miller Fisher variant is thought to be more common in Southeast Asia.

According to Isam Atroshi 2466 responders, 354 reported pain, numbness, and/or tingling in the median nerve distribution in the hands (prevalence, 14.4%; 95% confidence interval [CI], 13.0%-15.8%). On clinical examination, 94 symptomatic subjects were diagnosed as having clinically certain CTS (prevalence, 3.8%; 95% CI, 3.1%-4.6%). Nerve conduction testing showed median neuropathy at the carpal tunnel in 120 symptomatic subjects (prevalence, 4.9%; 95% CI, 4.1%-5.8%). Sixty-six symptomatic subjects had clinically and electrophysiologically confirmed CTS (prevalence, 2.7%; 95% CI, 2.1%-3.4%). Of 125 control subjects clinically examined, electrophysiological median neuropathy was found in 23 (18.4%; 95% CI, 12.0%-26.3%).

Carpal tunnel syndrome is a condition, in which the median nerve, which runs from the forearm into the hand, becomes pressed or squeezed at the wrist by enlarged tendons or ligaments. This results in pain and numbness in the fingers.

Charcot-Marie-Tooth disease is a hereditary neurological condition that affects both the motor and sensory nerves. One characteristic is a weakness of the foot and lower leg muscles. It is the most common inherited neuromuscular disorder affecting 10-36/100,000 individuals. It has no predilection for a particular race or sex. Charcot–Marie–Tooth disease (CMT) is among the most common inherited neurological disorders, with a prevalence reported as high as 36 per 100 000.

According to Department of Radiology, New York University Medical Center, The prevalence of lumbosacral intervertebral disk bulge and herniation on sagittal magnetic resonance (MR) images were determined in 45 pregnant subjects and 41 asymptomatic nonpregnant women of childbearing age. MR technique differed for the pregnant and nonpregnant groups. Fifty-three percent of pregnant and 54% of nonpregnant women had an abnormal disk (bulge or herniation) at one or more levels (L3-4, L4-5, or L5-S1). The difference was not statistically significant. There was also no significant difference in the distribution of outcomes among the 45 pregnant subjects, 17 parous nonpregnant women, and 24 nulliparous women. The

results suggest that lumbosacral disk bulges or herniations are common in women of childbearing age, whether pregnant or not, and that, contrary to an earlier report, pregnant women do not have an increased prevalence of disk abnormalities.

According to P.A. mcombe J. D. pollard J. G. mcleod ninety two patient with chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) have been studied in order to define better the clinical features, course, and prognosis of the condition and to identify aetiological factors. Sural nerve biopsy was performed on subjects. Electrophysiological studies were undertaken on all patients and demonstrated marked slowing of motor conduction and impairment of sensory conduction. The onset was usually gradual but there was a rapid rate of onset in 15(16%) patients. Males were more commonly affected than females. Weakness and paraesthesia were the most common symptoms but the pain was frequently featured. Age of onset ranged from 2 to 72 years. Sixty patients (65%) had a relapsing course and 32 patients (35%) a progressive or monophasic course; there was a significantly earlier age of onset in patients with relapsing disease. Thirty-two patients (35%) gave a history of preceding infection or some other possible antecedent precipitating event and there was a significantly higher titer for cytomegalovirus antibodies in the serum of patients with CIDP than in controls. The patients were followed up for an average time of approximately ten years. Most patients (73%) had made a good recovery and were independent, but 7 patients had either died or were completely immobilized as a result of their disease but. The value of treatment with corticosteroid therapy, immunosuppressive agents, and plasma exchange is discussed.

Sciatic nerve problems Sciatica refers to pain, weakness, numbness or tingling in the leg. Sciatica is a relatively common condition with a lifetime incidence varying from 13% to 40%. The common corresponding annual incidence of an episode of sciatica ranges from 1% to 6 %.

Nerve conduction studies may also be performed to identify the cause of symptoms such as numbness, tingling, and continuous pain.[7]

II. Research Elaborations

Statement of problem-

"Evaluate the effectiveness of structured teaching programme on knowledge regarding Nerve Conduction Study (NCS) among staff nurses in selected hospitals of Udaipur City, Rajasthan".

I. Objectives

1. To assess the knowledge score regarding Nerve Conduction Study (NCS) among staff nurses.
2. To evaluate the effectiveness of structured teaching programme among staff nurses on knowledge regarding Nerve Conduction Study (NCS).
3. To find out the association between pre-test knowledge score with selected socio-demographic variables.

III. Hypothesis

H_1: There is a significant difference between the pre-test and post-test knowledge score of staff nurse regarding Nerve Conduction Study (NCS).

H_2: There is a significant association between pre-test knowledge score with selected socio-demographic variables.

Material and method

Population-staff nurses.

Sample- The staff nurses working in selected hospital in Udaipur.

Sample size-120 staff nurses.

Settings- The study was conducted in following selected hospital at Udaipur: Geetanjali medical college & hospital Udaipur

Sampling technique- Convenient sampling technique

The conceptual framework for the study was developed on the bases of WHO's System Model.

IV. Research design

The research design selected for the present study was a one group per-test post-test research design.

PRE TEST (Dependent variable)	**INTERVENTION (Independent variable)**	**POST TEST Dependent variable)**
O1 Knowledge of staff nurses	X Structure teaching programme regarding nerve conduction study	O2 Knowledge of staff nurses

Table 1: Pre experimental one group pre-test and post-test research design

The interpretations of the symbol are as below

O1 - Administration of pre-test knowledge Questionnaire

O2 - Administration of post-test knowledge Questionnaire
X - Intervention (Structure teaching programme)

ETHICAL CONSIDERATION

After obtaining permission from research committee of Geetanjali College of nursing, prior permission was obtained from nursing superintendent from selected hospital at Udaipur. Consent was taken from each participant who had participated in the study.

DESCRITION OF THE TOOL

Section A- Demographic Data: consisted of selected socio-demographic variables such as age in year, gander, education qualification, working experience, area of work, attended any seminar regarding nerve conduction study.

Section B- Tools and scoring technique: A structured self-administered questionnaires was selected based on the objective of the study as it was considered the based and appropriate instrument to elicit the response from the literate subject.

SCORING

The knowledge of staff nurses regarding the outcomes of nerve conduction study was scored as follows, one mark for each correct answer and zero marks for incorrect answer. The maximum score was 30, to interpret level of knowledge the score was distributed as follows; Interpretation of knowledge:

Level	Range
Inadequate knowledge	<50 %
Moderate knowledge	51-75 %
Adequate knowledge	>76 %

An answer key was prepared for scoring answer to the structured knowledge questionnaire.

DATA COLLECTION AND DATA ANALYSIS

The data was presented under the following sections

Section-I: Description of socio-demographic variables of the respondents.

Section-II: Distribution of respondents according pre-test and post-test level of knowledge score.

Section-III: Effectiveness of structure teaching programme on knowledge of staff nurses regarding nerve conduction study.

V. Result

Table 2: frequency and Percentage distribution of respondents to their level of knowledge score.

N=120

Level of knowledge	Score	Respondents			
		Per-test		Post-test	
		Frequency	Percent (%)	Frequency	Percent (%)
Inadequate knowledge	<50%	116	96.67	00	00
Moderate knowledge	51-75%	04	3.33	12	10
Adequate knowledge	>75%	00	00	108	90
Total		**120**	**100**	**120**	**100**

Table 2: The result showed that, in pre-test 96.67% of the respondents had inadequate knowledge ,3.33 % of the respondents had moderate knowledge and none of the respondents had adequate knowledge and in post-test 90% of the respondents had adequate knowledge and 10% of the respondents had moderate adequate knowledge and none of the respondents had an inadequate knowledge regarding nerve conduction study.

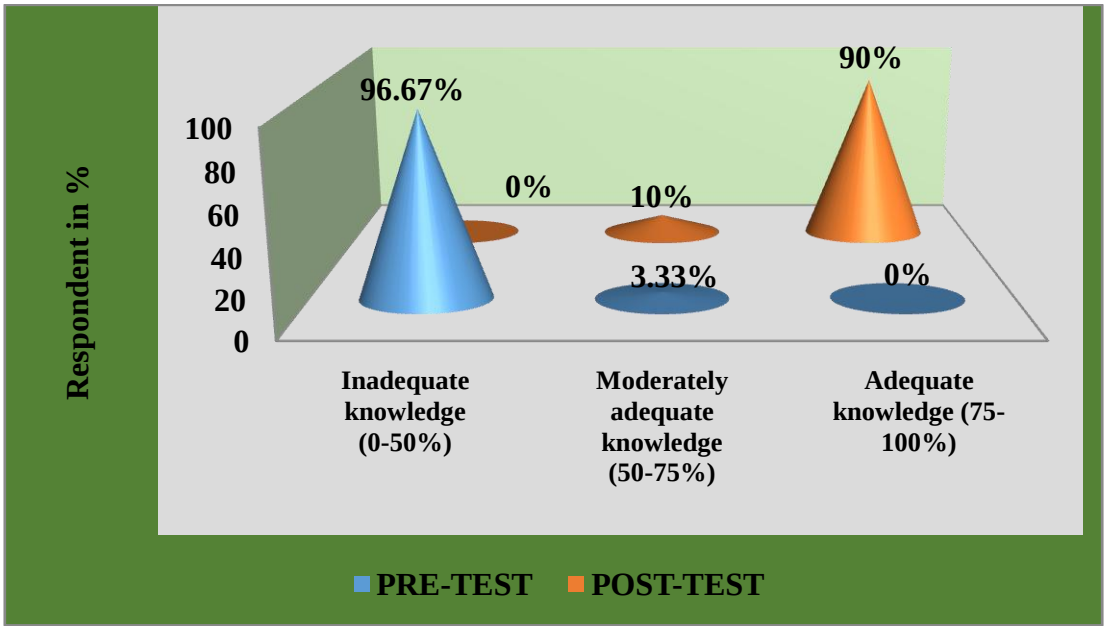

Figure 2: Frequency and Percentage distribution of respondents to their level of knowledge score

SECTION: III

EFFECTIVENESS OF STRUCTURE TEACHING PROGRAMME ON KNOWLEDGE OF STAFF NURSES REGARDING NERVE CONDUCTION STUDY.

The paired "z" value was computed to determine the effectiveness of structure teaching programme on knowledge of staff nurses regarding nerve conduction study.

The following research hypothesis was stated

H_1 -There is a significant difference between pre-test knowledge scores and post- test knowledge scores of staff nurses regarding nerve conduction study.

H_2- There will be significant association between the levels of knowledge staff nurses regarding nerve conduction study with selected socio-demographic variables.

Table 3: Area wise pre-test and post-test knowledge score N=120

Area	Maximum score	Pre-test			Post-test		
		Mean	Mean %	SD	Mean	Mean %	SD
Introduction	8	6.31	78.88	0.64	13.29	83.06	1.21
Indication & contraindication	4	3.26	81.5	0.65	1.7	85	0.51
Procedure	16	3.16	19.75	1.18	5.28	335	1.53
Risk of procedure	2	1.44	36	0.74	0.84	72	0.36
Total	**30**	**14.17**	**216.13**	**3.21**	**21.11**	**273.06**	**3.61**

Table3: The result showed that the mean, standard deviation and percentage of pre-test and post-test knowledge score on different areas of nerve conduction study.

In the area of Introduction, definition of nerve conduction study, mean score 6.31and SD 0.64 in pre-test of the respondents and mean value 13.29 and SD 1.21 in post-test of the respondents. In the area of types of child abuse, the mean score 2.28 and SD 1.16 in pre-test of the respondents and mean score 4.65 and SD 0.52 in post-test of the respondents. In the area Indication & contraindication, mean score 3.26and SD 0.65 in pre-test of the respondents and mean score 1.7and SD 0.51 in post-test of the respondents. In the area of Procedure of NCS, mean score 3.16and SD 1.18in pre-test of the respondents and mean score 5.28and SD 1.53 in post-test of the respondents. In the area of Risk of procedure, mean score 1.44and SD 0.74 in pre-test of the respondents and mean score 0.84 and SD 0.36 in post-test of the respondents. Therefore, the results confirmed that the structure teaching programme was highly effective in improving the knowledge of staff nurses regarding nerve conduction study.

Table 4: Effectiveness of structure teaching programme on knowledge of staff nurses regarding nerve conduction study.

Knowledge assessment	Mean	Mean %	SD	Enhancement	Enhancement %	df	Z	Inference
Pre test	10.71	35.7	2	13.84	46.13%	119	57.59	**S***
Post test	24.55	81.83	1.69					

S=Significant

Table 4: The result showed that the mean post test knowledge score 24.55(81.83%) is greater than the mean pre test knowledge score 10.71 (35.7%). The enhancement in the knowledge of respondents is 13.84 (46.13%). The 'Z' value of 57.59 was significantly higher than the table value 1.96 at 0.05 level of significance. Hence research hypothesis H1 was accepted. This indicates that the structure teaching programme regarding nerve conduction study was effective in improving the knowledge score of respondents regarding nerve conduction study.

VI. Conclusion

This study concluded that there is improvement in the level of knowledge of staff nurses which indicates that the structure teaching programme is effective. The demographic variables of patients significantly associated with the pre-test knowledge score. The development of structure teaching programme will help the staff nurses to enhance their knowledge regarding nerve conduction study.

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