

A Quasi-Experimental Study to Assess the Effectiveness of Communication Booklet on Level of Communication and Satisfaction among Caregivers of Clients with Acquired Neurogenic Communication Disorders at Selected Hospitals, Nagercoil

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Abstract:-

➤ *Aim and Objective*

To assess the effectiveness of communication booklet on level of communication and satisfaction among caregivers of clients with acquired neurogenic communication disorders.

➤ *Methodology*

A quasi-experimental pre and post-test control group design was chosen for the study, conducted at Muthu Neuro Centre and Dr. Jeyasekharan Medical Trust, Nagercoil. The samples consisted of 60 caregivers selected using purposive sampling technique. An Interactive session and illustration on the use of communication booklet was the intervention of the study. The pre and post-test level of communication and satisfaction was assessed using checklist and rating scale respectively.

➤ *Results*

The analysis of the study findings revealed that, with regard to comparison of the post-test level of communication between the experimental and control group, the calculated, unpaired 't' value was 23.028 which revealed high statistical significance at $p < 0.001$. With regard to comparison of the post-test level of satisfaction, the calculated unpaired 't' value of 16.519 revealed high statistical significance at $p < 0.001$ level. The analysis of correlation using Karl Pearson correlation coefficient revealed the calculated 'r' value as 0.501, which showed moderately positive co-relation at $p < 0.05$ level. A significant level of association was identified between satisfaction and age in years in the experimental group and type of family in the control group.

➤ *Conclusion*

Hence the communication booklet developed by the investigator proved to be an effective aid in enhancing the level of communication and satisfaction among caregivers of clients with acquired neurogenic communication disorders.

Keywords:- Level of Communication, Level of Satisfaction, Communication Booklet, Acquired Neurogenic Communication Disorders.

I. INTRODUCTION

Communication is the exchange of thoughts, messages or information through speech, signals, writing, printed pictures or behaviours without communication, the feelings of an individual person can't be expressed. Gestures or printed action pictures may serve to enhance the effectiveness of communication. Some of the assistive communication strategies to overcome communication problems are helpful resources such as smile, touch, gestures, pictures, photos, objects or a dictionary, using an alphabet or pictorial representation to supplement communication, and other appropriate communication aids may also be beneficial.

II. BACKGROUND OF THE STUDY

Neurogenic communication disorders refer to conditions in which the individual experiences inability to exchange information with others because of speech or language problems secondary to nervous system impairments. The disorders can range from simple sound substitution to the inability to understand or use their native language. In general, communications disorders commonly refer to problems in speech (comprehension and/or expression) that significantly interfere with an individual's achievement and/or quality of life.

S.No	Neurogenic Disorders	Total Number Of Patients Hospitalized /Year	Percentage with Communication Disorders
1.	Aphasia	10,00,000	98.3%
2	Primary progressive Aphasia (PPA)	3,86,000	86.9%
3.	Stroke	77,60,000	67%
4.	Traumatic Brain Injury (TBI)	2,75,000	54%
5.	Amyotrophic Lateral Sclerosis (ALS)	30,000	43%
6.	Dementia	45,40,000	39.4%
7.	Brainstem Impairment	3,64,000	34.7%
8.	Apraxia of speech	60,000	30.6%

World Health Organization (2012) Report on Prevalence of Neurogenic and Communication Disorders

The above table shows the global prevalence of neurogenic communication disorders as per WHO report (2012). Aphasia ranks first with 98.3% of the 10,00,000 hospitalized clients suffering with communication disorders, followed by PPA with 86.9% and stroke with 67%.

At some point in the disease progression, 80% to 95% of people with Amyotrophic Lateral Sclerosis are unable to meet their daily communication needs using natural speech. In time, most become unable to speak at all. As speech becomes difficult to understand, many supplement their speech by identifying the first letter of each word on an alphabet board, pictures or by identifying the topic on a communication board. Communication booklet is a cost effective and handy aid, which provides caregivers with an overall roadmap of the care needed by those diagnosed with acquired neurological communication disorder, especially with a focus on Alzheimer's disease, dementia, stroke and traumatic injuries. The booklet helps the caregivers to communicate with the patients who have neurogenic communication disorder, since it outlines the daily activities, emotions, caring behaviours and all other needed materials of day-to-day life in pictorial form.

III. OBJECTIVES

1. To assess and compare the pre-test and post-test level of communication and satisfaction regarding communication booklet among the experimental and control group.
2. To compare the pre-test and post-test level of communication and satisfaction regarding communication booklet between the experimental and control group.
3. To correlate the mean differed level of communication with mean differed level of satisfaction regarding communication booklet among the experimental and control group.
4. To associate the selected demographic variables with mean differed level of communication and satisfaction of the caregivers in the experimental and control group.

➤ Null Hypotheses

1. **NH₁** - There is no significant difference in the pre-test and post- test level of communication and satisfaction regarding communication booklet between the experimental and control group at $p < 0.05$.
2. **NH₂** – There is no significant relationship between the mean differed level of communication and satisfaction regarding communication booklet among the experimental and control group at $p < 0.05$.
3. **NH₃** – There is no significant association of selected demographic variables with the mean differed level of communication and satisfaction regarding communication booklet in the experimental and control group at $p < 0.05$.

IV. CONCEPTUAL FRAMEWORK

In view of explaining and relating various aspects of the phenomena being studied, related to the interaction between the nurse investigator and the caregivers of clients with acquired neurogenic communication disorders, regarding communication booklet, the investigator adopted Evelyn Adams Interpersonal Theory, to conceptualize the research study.

The theory focused on the following component,

A. Interaction

In this theory, refers to the human relationship between the beneficiary and the professional, that aids the former to live more happily. In the interaction phase, the nurse investigator and caregiver together interacted and developed helping interpersonal relationship. This relationship and systematic process helped the nurse investigator to device communication booklet with less difficulty.

B. Assessment

Assessment is the collection of information about the beneficiary, using specific instrument, e.g., data collection tool. In this phase, it refers to the assessment of demographic variables, level of communication and level of satisfaction among caregivers, in both experimental and control group. Nurse investigator used checklist for assessing level of communication and self-administered rating scale for assessing level of satisfaction.

C. Goal Setting

It refers to, the phase in which the investigator and clients strive to achieve change in behaviour through mutual discussion. In this study, it refers to the mutual discussion between the nurse researcher and the caregiver, aimed at reducing the caregiver burden and improving the level of communication and satisfaction of the caregivers of clients with acquired neurogenic communication disorders.

D. Intervention

It refers to the focus and modes of the professional intervention to bring changes in client’s behaviour. In this study, the intervention phase refers to the interactive discussion session and illustration on the use of communication booklet by investigator to the caregivers.

E. Change in Behaviour

It refers to substitution of one thing in place of another (an alteration). In this study, it refers to the reduction in caregiver burden by attaining improved level of communication and adequate level of satisfaction with communication booklet. This may be reinforced further, by further provision of communication booklet.

The nurse investigator believes that the positive outcome will lead to the attainment of strengthened evidence based practice among caregivers of acquired neurogenic communication disorders through the utilization of communication booklet, which will improve the level of communication and level of satisfaction of caregivers.

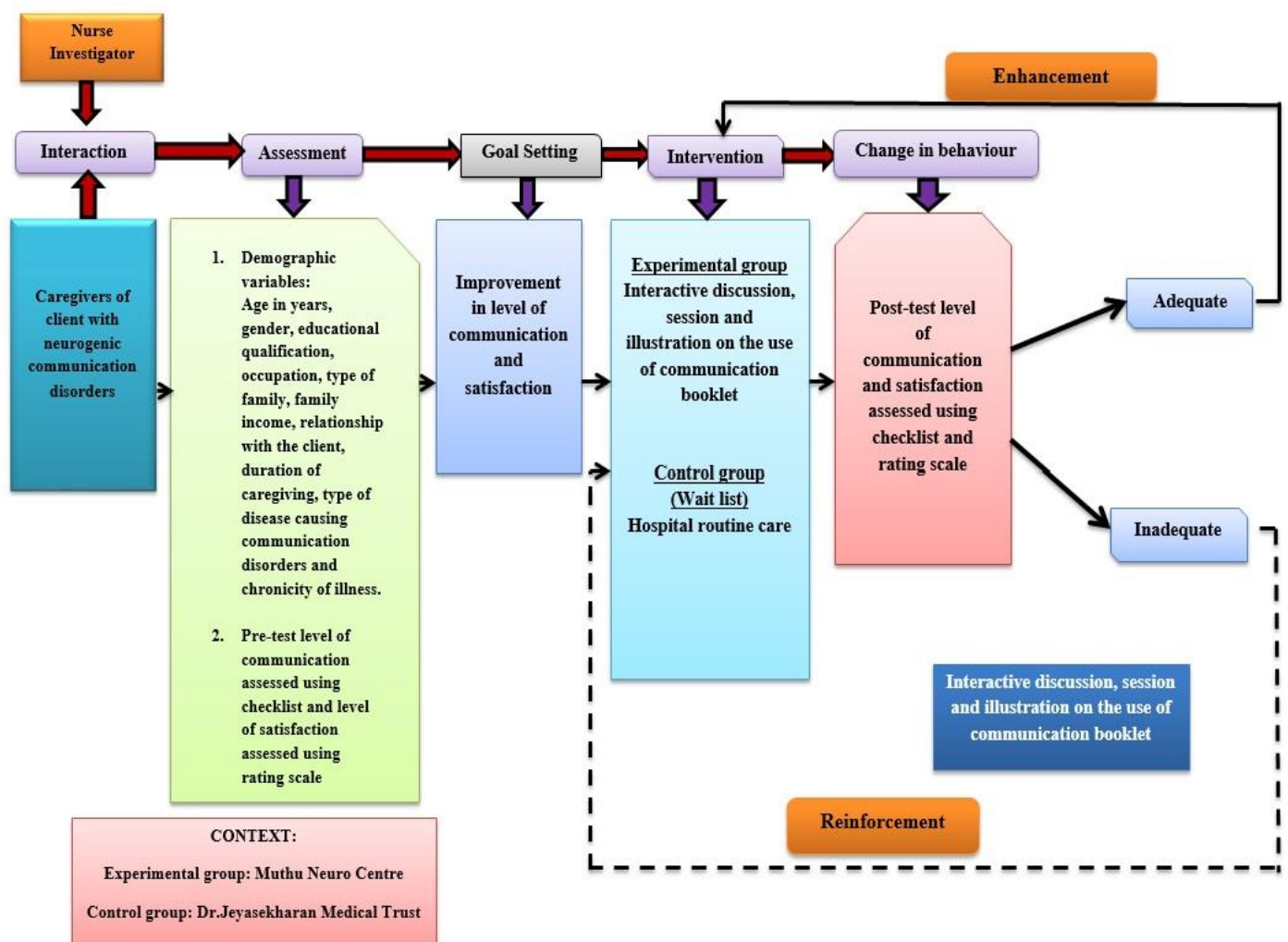


Figure 1.9.1: CONCEPTUAL FRAMEWORK BASED ON EVELYN ADAM INTERPERSONAL MODEL (1991)

V. RESEARCH METHODOLOGY

A quantitative research approach has been used for this study. The research design used for this study is quasi-experimental study. The research setting for the experimental group was neuro ward, rehabilitation ward, neuro extension and medical ward in Muthu Neuro Foundation, Nagercoil. It is a 100-bedded hospital with

approximately 50 beds in the neuro units. The control group was selected in Dr.Jeyasekharan Medical Trust. It is a 750-bedded hospital, which has 50 beds for neuro in-patients. The caregivers who satisfied the inclusion criteria were the samples for the study chosen using purposive sampling technique. The intervention tool prepared by the investigator was Communication Booklet. The booklet contained illustrated and pictures representing client needs

pertaining to clothing, hygiene, health, money, leisure, accommodation, authorities (role), travel, measurements, emotions, food, world and remembrance card. Personal data sheet on the demographic characteristics of caregivers which includes age in years, gender, qualification, occupation, type of family, relationship with client, family income, duration of care giving, type of disease causing communication disorders and chronicity of client’s illness.

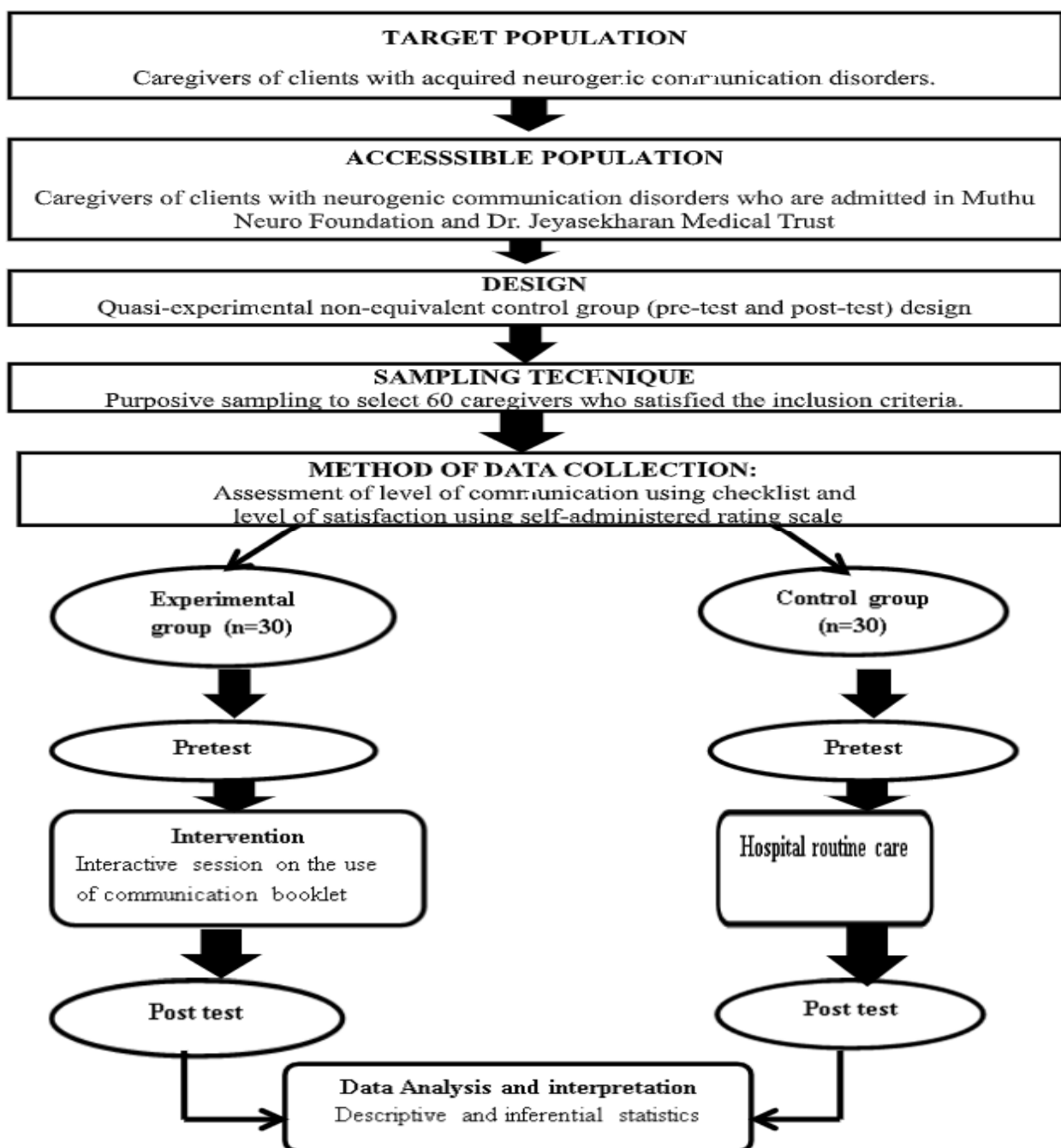
The level of communication was assessed using checklist and the level of satisfaction was assessed using rating scale devised by the investigator. Both descriptive and inferential statistics were used for analysis.

The content validity of the data collection tool and intervention tool was ascertained with the expert’s opinion in the following field of expertise,

- Neurologist-2
- Intensivist-1
- Medical Surgical Nursing experts-4
- Speech therapist-1

Modifications suggested by the experts in the tool included inclusion of a few additional questions in the checklist to assess level of communication, and modification of demographic variables. These changes were incorporated in the tool. All the experts had their consensus and then the tool was finalized.

VI. SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY



VII. FINDINGS

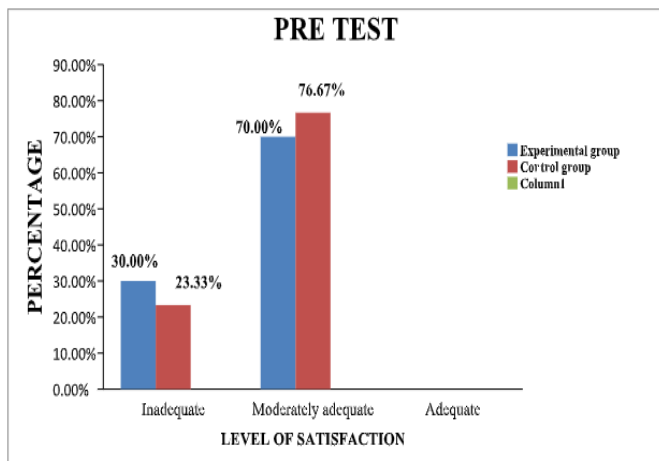
➤ *ASSESSMENT OF PRE AND POST TEST LEVEL OF COMMUNICATION AMONG EXPERIMENTAL GROUP AND CONTROL GROUP.*

Communication	Inadequate (≤50%)				Moderately adequate (51-75%)				Adequate (>75%)			
	Experimental Group n=30		Control Group n=30		Experimental Group n=30		Control Group n=30		Experimental Group n=30		Control Group n=30	
	No	%	No	%	No	%	No	%	No	%	No	%
Pre-Test	20	66.67	24	80.0	10	33.33	6	20.0	0	0	0	0
Post-Test	0	0	22	73.33	4	13.33	8	26.67	26	86.67	0	0

Frequency and percentage distribution of pre and post test level of communication in the experimental group and control group.

➤ *FREQUENCY AND PERCENTAGE DISTRIBUTION OF PRE AND POST-TEST LEVEL OF SATISFACTION IN THE EXPERIMENTAL GROUP AND CONTROL GROUP.*

➤ *COMPARISON OF PRE AND POST TEST LEVEL OF COMMUNICATION AND SATISFICATION AMONG THE EXPERIMENTAL AND CONTROL GROUP.*



Frequency and percentage distribution of pre and post-test level of satisfaction in the experimental group and control group.

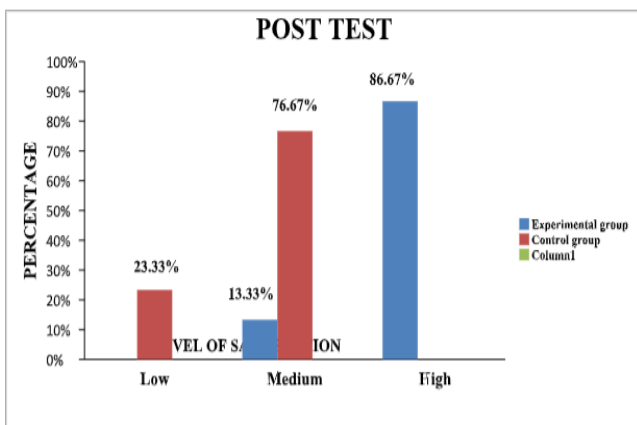
Group	Pretest		Post test		Paired 't' value
	Mean	S.D	Mean	S.D	
Experimental n=30	8.37	2.51	18.30	1.76	t= 16.035 p= 0.001, S***
Control n=30	7.77	1.67	8.33	1.58	t= -2.599 p=0.015, NS

Comparison of pre and post-test level of communication among the experimental and control group (N=60)
***p<0.001, S-Significant, NS- Non Significant

➤ *Comparison of the pre and post-test level of satisfaction among the experimental and control group.*

With regard to the comparison of the level of satisfaction, in the experimental group, the pre-test mean satisfaction score was 20.47 with S.D 3.59 and the post-test mean satisfaction score was 35.07 with S.D 4.42. The calculated paired 't' value of 18.650 revealed high statistical significance at p<0.001 level.

In comparison, in the control group the pre-test mean satisfaction score was 20.20 with S.D 2.12 and the post-test mean satisfaction score was 20.20 with S.D 2.19. The calculated paired 't' value of 0.000 was found to have no statistical significance.



Frequency and percentage distribution of pre and post-test level of satisfaction in the experimental group and control group.

Test	Experimental n=30		Control n=30		Unpaired 't' value
	Mean	S.D	Mean	S.D	
Pre test	8.37	2.51	7.77	1.67	t=1.089 p=0.282, N.S
Post test	18.30	1.76	8.33	1.58	t=23.028 p=0.001, S***

Comparison of the pre and post-test level of communication between the experimental and control group (N=60)

***p<0.001, S- Significant, N.S – Significant.

➤ *Comparison of pre and post-test level of satisfaction between the experimental and control group.*

In the pre-test, the experimental group mean satisfaction score was 20.47 with S.D 3.59 and in control group the mean satisfaction score was 20.20 with S.D 2.12. The calculated unpaired 't' value 0.350 showed no statistical significance.

In the post test, the experimental group mean satisfaction score was 35.07 with S.D 4.41 and for the control group the mean satisfaction score was 20.20 with S.D 2.19. The calculated unpaired 't' value of 16.519 revealed high statistical significance at p<0.001 level. The above findings revealed that the interactive session and illustration of the communication booklet by the investigator and its use by the caregivers in the experimental group, was effective in enhancing their level of communication and satisfaction.

➤ *CORRELATION OF MEAN DIFFERED LEVEL OF COMMUNICATION WITH MEAN DIFFERED LEVEL OF SATISFACTION AMONG THE EXPERIMENTAL AND CONTROL GROUP.*

Group	Communication		Satisfaction		'r' value
	Mean	S.D	Mean	S.D	
Experimental n=30	9.93	0.75	14.60	0.84	r=0.501** p=0.005, S
Control n=30	0.57	1.10	0.00	2.12	r=0.027, p=0.0885, N.S

Correlation of mean differed level of communication with mean differed level of satisfaction among the experimental group and control group **p<0.05, S-Significant, N.S – Not Significant (N=60)

This reveals that after the interactive session and regular use of communication booklet for a week, by the experimental group, the improvement in the level of communication had a positive effect of enhancing their level of satisfaction also. A similar outcome was not identified in the control group.

VIII. DISCUSSION

➤ *The first objective of the study was to assess and compare the pre-test and post-test level of communication and satisfaction regarding communication booklet among the experimental and control group.*

The analysis of pretest level of communication in the experimental group showed that majority of the caregivers 20(66.67%) had inadequate level of communication and 10(33.33%) had moderate level of communication. The post test level of communication revealed improvement with majority, 26(86.67%) showing adequate level of communication and only 4(13.33%) with moderate level of communication.

The analysis of pre-test level of communication in the control group revealed that majority of the caregivers, 24(80.0%) had inadequate level of communication and 6(20.0%) had moderate communication. With regard to post test level of communication in the control group, 22(73.33%) had inadequate communication and 8(26.67%) had moderate level of communication.

The analysis of findings related to pre-test level of satisfaction in the experimental group, showed that 9(30.0%) had low level of satisfaction and 21(70.0%) had moderate level of satisfaction. An improvement was noted in the post-test, with only 4(13.33%) caregivers showing moderate level satisfaction and 26(86.67%) expressing high level of satisfaction.

The analysis of the level of satisfaction in the control group revealed that 7(23.33%) had low level of satisfaction and 23(76.67%) had moderate level of satisfaction, both in the pre and post test.

The findings related to comparison of pre and post test level of communication in the experimental group showed that, the pretest mean communication score was 8.37 with S.D 2.51 and the post test mean communication score was 18.30 with S.D 1.76. The calculated paired 't' value of 16.035 showed high statistical significance at p<0.001.

The comparison between the pre and post-test level of communication in the control group revealed the pretest mean score of 7.77 with S.D 1.67 and the post test mean score of 8.33 with S.D 1.58. The calculated paired 't' value of -2.599 showed no statistical significance.

With regard to the comparison of the level of satisfaction in the experimental group, the pre-test mean satisfaction score was 20.47 with S.D 3.59 and the post test mean score was 35.07 with S.D 4.42. The calculated paired 't' value of 18.650 revealed high statistical significance at p<0.001.

The findings related to comparison between pretest and post test level of satisfaction in the control group revealed the pre test mean satisfaction score of 20.20 with S.D 2.12 and the post test mean satisfaction score of 20.20 with S.D 2.19. The calculated paired 't' value of 0.000 was found to have no statistical significance.

➤ *The second objective of the study was to compare the pre-test and post-test level of communication and satisfaction regarding communication booklet between the experimental and control group.*

The comparison of pretest level of communication between the experimental and control group showed that the mean communication score of the experimental group was 8.37 with S.D 2.51 and in the control group the mean score was 7.77 with S.D 1.67. The calculated, unpaired 't' value of 1.089 did not show any statistical significance.

The comparison of the post test mean communication score between the two groups revealed that the experimental group mean score was 18.30 with S.D 1.76 and for the control group, the mean communication score was 8.33 with S.D 1.58. The calculated, unpaired 't' value of 23.028 revealed high statistical significance at $p < 0.001$.

The comparison of the pretest mean satisfaction score 20.47, S.D 3.59 of the experimental group, with the control group the mean satisfaction score of 20.20, S.D 2.12 revealed the calculated unpaired 't' value 0.350 which showed no statistical significance.

The post test mean satisfaction score 35.07 with S.D 4.41, of the experimental group, when compared with the control group the mean satisfaction score of 20.20 with S.D 2.19 showed the calculated unpaired 't' value of 16.519 which revealed high statistical significance at $p < 0.001$.

The above findings were consistent with the randomized control trial, conducted by **Laffontlet.al (2009)** among 100 aphasic participants with stroke, to identify the effectiveness of Patient Caregiver Interaction Device and reduction of caregiver burden in University of Medicine, Toronto. The findings revealed that the use of the interaction device had a highly significant effect in enhancing the level of communication and reducing the level of burden of the caregivers.

Hence the null hypothesis **NH₁** stated earlier that **“there is no significant difference in the pretest and posttest level of communication and satisfaction regarding communication booklet between the experimental group and control group at $p < 0.05$ ”** was rejected.

➤ *The third objective of the study was to correlate the mean differed level of communication with mean differed level of satisfaction regarding communication booklet among the experimental and control group.*

In the experimental group, the mean communication score was 9.93 with S.D of 0.75 and the mean satisfaction score was 14.60 with S.D of 0.84. The calculated Karl Pearson 'r' value was 0.501 with significance at $p < 0.05$ level. This showed that there was positive correlation between the level of communication and satisfaction in the experimental group.

In the control group, the analysis of the mean communication score 0.57 with S.D 1.10 with the mean satisfaction score of 0.00 with S.D of 2.12, revealed the calculated Karl Pearson 'r' value 0.027 which showed no statistical significance.

The above finding is consistent with the descriptive study conducted by **Bowen A. et al (2012)** to assess the improvement in the level of communication, and satisfaction of the caregivers through reduction of their burden, following patient caregiver interaction with augmentive communication booklet, among 100 aphasic patients in Single Institute, Chicago. The investigators determined the adherence of caregivers and patients to the communication booklet and thereby the improvement in the level of communication and satisfaction. The results revealed a significant correlation between the level of communication and satisfaction which showed that satisfaction of the caregivers increased with improved levels of patient-caregiver communication.

Hence the null hypothesis **NH₂** stated earlier that **“there is no significant relationship between the mean differed level of communication and satisfaction regarding communication booklet among the experimental and control group at $p < 0.05$ ”** was rejected for the experimental group and accepted for the control group.

➤ *The fourth objective of the study was to associate the selected demographic variables with mean differed level of communication and satisfaction regarding communication booklet in the experimental and control group.*

The analysis to associate selected demographic variables such as age, gender, education, occupation, type of family, relationship of the caregivers with the client, monthly income, duration of caregiving, type of disease causing communication disorders and chronicity of illness with the mean differed level of communication and satisfaction of experimental and control group was done.

No statistically significant association was observed between the mean differed communication score and the selected demographic variables of both the experimental and control group. With regard to the association of the mean differed level of satisfaction and the selected

demographic variables, a statistically significant association was identified, at $p < 0.05$ level, with regard to age in the experimental group, and type of family in the control group.

The above findings are consistent with the study by **Oosterveer D. M. & Ramburan Mishre R. (2010)**, to determine the association of level of communication and satisfaction with high caregivers strain/burden among caregivers of post neurodegenerative aphasia patients in Sophia Rehabilitation Centre, Netherlands. The study revealed that the duration of more than 6 months of caregiving, level of communication and satisfaction is low in patients who are independently associated with high caregiver burden ($p = 0.00007$ and $p = 0.0031$ respectively)

Hence the null hypothesis H_0 stated earlier that **"There is no significant association of the selected demographic variables with mean differed level of communication and satisfaction regarding communication booklet in the experimental and control group at $p < 0.05$ "** was rejected for the association of the mean differed level of satisfaction with age (in years) in the experimental group and type of family in the control group and **accepted** for all the other demographic variables.

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