

## **CHAPTER-IV**

### **RESULTS**

This chapter deals with the analysis and interpretation of the data collected from 100 elderly in order to compare and determine the effectiveness of Nurse Led Cognitive Stimulation Program (NLCSP) on cognitive functions and quality of life among elderly. The main purpose of this is to summarize, organize, evaluate, interpret, and communicate numeric information. On the basis of the objectives and hypothesis formulated for the study data was tabulated, analyzed and interpreted by descriptive and inferential methods of statistics using SPSS 20 software. The data was analyzed and their interpretations were drawn. The cognitive functions and quality of life of elderly were assessed before and after administration of Nurse-Led Cognitive Stimulation Program (NLCSP).

#### **OBJECTIVES OF THE STUDY**

The objectives of the study were:

#### **PRIMARY OBJECTIVES**

1. To explore problems related to the decline cognitive functions among elderly and their care givers.
2. To develop and implement Nurse Led Cognitive Stimulation Program (NLCSP).
3. To assess the effectiveness of Nurse Led Cognitive Stimulation Program (NLCSP) on cognitive functions and quality of life among elderly.

#### **SECONDARY OBJECTIVES**

4. To determine correlation between cognitive functions and quality of life among elderly in the selected rural community.

5. To find out association between cognitive functions, quality of life and selected demographic variables among elderly in the selected rural community.

## **HYPOTHESES**

The hypothesis was tested at 0.05 level of significance.

**H<sub>1</sub>:** There would be significant improvement in the cognitive functions of the elderly after undergoing Nurse-Led Cognitive Stimulation Program as measured by Mini Mental State Examination.

**H<sub>2</sub>:** There would be significant improvement in the Quality of life of elderly after, undergoing Nurse-Led Cognitive Stimulation Program as measured by QOL-AD Scale of Quality of Life.

**H<sub>3</sub>:** There would be significant correlation between cognitive functions and quality of life among elderly in selected rural community.

**H<sub>4</sub>:** There would be significant association between cognitive functions and quality of life with selected demographical variables among elderly.

## **Organization of findings**

The analysis of the data is presented under the following headings:

**Section I:** Description of socio-demographic characteristics of study participants

**Section II:** Analysis according to objectives of the study following under these headings

**2.1.** Qualitative analysis (Theme generation of FGD)

**2.2.** Effectiveness of Nurse Led Cognitive Stimulation Program (NLCSP) on cognitive functions among elderly

**2.3.** Effectiveness of Nurse Led Cognitive Stimulation Program (NLCSP) on quality of life among elderly among elderly

**2.4.** Correlation between cognitive functions and quality of life score among elderly in selected rural community

**2.5.** Association of cognitive functions score with selected socio-demographic variables in experimental and control group

**2.6.** Association of quality of life score with selected socio-demographic variables in experimental and control group

**Section I: Description of socio-demographic variables of study participants**

**Table 1: Frequency and percentage distribution of participants according to their selected socio-demographic variables.**

Socio-demographic variables	Categories	Experimental group (n=50)		Control group (n=50)		$\chi^2$ /Fisher Test	df	p values
		f	(%)	f	(%)			
Age (In years)	60-65 years	13	26%	22	44%	6.46	3	0.09
	66-70 years	29	58%	19	38%			
	71-75 years	8	16%	7	14%			
	>75	0	0%	2	4%			
	Mean $\pm$ SD	66.44 $\pm$ 3.18		65.3 $\pm$ 4.70				
Gender	Male	38	76%	26	52%	6.25	1	0.06
	Female	12	24%	24	48%			
Educational status	No Formal Education	9	18%	19	38%	9.23	4	0.10
	Primary Education	24	48%	13	26%			
	Senior Secondary Education	10	20%	13	26%			
	Higher Secondary	6	12%	4	8%			
	Graduate & above	1	2%	1	2%			
Occupational status	Private Job	13	26%	4	8%	14.7	3	0.12
	Business	14	28%	7	14%			
	Agriculture	12	24%	23	46%			
	Unemployed	11	22%	16	32%			

<b>Financial dependency status</b>	Work	36	72%	24	48%	8.67	3	0.39
	Pension	1	2%	0	0%			
	From Family	13	26%	24	48%			
	Other Relative	0	0%	2	4%			
<b>Marital status of elderly</b>	Single	0	0%	3	6%	3.33	2	0.18
	Married	35	70%	35	70%			
	Widow/ Widower	15	30%	12	24%			
<b>Type of family</b>	Joint	32	64%	36	72%	0.73	1	0.39
	Nuclear	18	36%	14	28%			
<b>Currently having any diseases</b>	Yes	21	42%	28	56%	1.96	1	0.16
	No	29	58%	22	44%			
<b>Any care giver</b>	Yes	45	90%	45	90%	0.00	1	1.00
	No	5	10%	5	10%			
<b>Any previous exposure to such program</b>	No	50	100%	50	100%	-	-	-

\*=chi-square test/Fisher's exact,  $p < 0.05$

Table 1 shows that out of 100 participants (experimental  $n=50$ , and control  $n=50$ ), in the experimental group more than half (58%) of the participants were in the age group of 65–70 years whereas in control group most of them were (44%) of age group 60–65 years. In both the groups male gender as participant was dominant, 76% in experimental and 52% in control group respectively. Most of elderly (48%) in experimental group were having only primary education whereas in control group most of them (38%) were having no formal education. About occupation, most of the participants in experimental group (28%) were involved in business, whereas in control group majority of elderly (46%) were

involved in agriculture. According to their financial dependency status, nearly one third (72%) in experimental group depended on work, but in control group same percentage of elderly (48%) were dependent on work as well as on their families for their financial needs.

Most of the elderly in both groups (70%) were married and belonged to joint family with majority (64%) and (72%) in experimental and control group respectively. More than half of the elderly (58%) in experimental group were not having any kind of disease, but in control group most of them (56%) were having some disease. In both the groups majority of participants (90%) were having care givers and none of them (100%) were having any previous exposure to such training program as the NLCSP.

To find out the homogeneity, socio-demographic variables were compared in both the groups, and as all data were categorical in nature, so chi square/Fisher's exact test were performed. No significant difference was found in the result, and thus it was concluded that both groups were homogeneous in terms of selected socio-demographic variables and were from the same population.

## Section II: According to objectives of the study

**Objective 1:** To explore problems related to the decline in cognitive functions among elderly and their care givers.

As per objective of the study, in first phase focused group discussion (FGD) was conducted on groups of elderly and their caregivers to explore the problems related to poor cognitive functioning. Following the data collection through FGD, qualitative analysis was done by coding, categorizing, and theme generation. The transcripts in the study were generated by audio recordings. The collected content was read multiple times by the investigator to develop an understanding and various codes were identified and common codes were grouped into categories to generate various themes. The focused group discussion brought a number of problems faced by elderly and their caregivers.

### Section 2.1. Qualitative Analysis (Theme Generation of FGD).

**Table 2: Themes generated in the groups of elderly:**

Themes	Sub-themes	Supportive Verbatim
Decline in cognitive functioning	a) Memories and thinking difficulties b) Age related process c) Poor problem solving and decision-making skills d) Feeling anxious and helpless due to these changes	“I feel that my cognitive abilities are declining, it is because of my age  “It’s not shocking but a disturbing process”  “I am not same like I was in my young age.”
Change in personal, family and social life	a) Totally disturbed daily routine b) Change in social and family role c) Stress and conflict in the	“I cannot support my family in same way like I used to do before because of my declining abilities”  “My daughter in law fight with my son

	family.	because of my decreasing abilities”  “Sometimes I feel so lonely and frustrated due to this.”
Perception of decline	a) Understanding signs and symptoms b) Identified and worried about falling abilities c) Blaming age but with acceptance	“Yes, I can sense these changes as these are related to my body”  “I am getting weak in all aspects and it is because of my age.”
Partially dependent	a) Seeks medicinal and health- related care b) Try to be self-dependent c) I can do my routine care d) Need family support	“Yes, my family is there to help me”  “When I need them, I ask for help.”
Mixed coping technique	a) Patience as priority b) Write and repeat tasks and things to remember c) Spiritual trust d) Following ideals	“Usually, I write things to remember like important dates and grocery items.  Rest I know Almighty is there to help me and also, I have to accept it with calmness.”

Table 2 shows the various themes and subthemes identified in Focused Group Discussion of elderly done to explore their problems related to decline in cognitive abilities along with supportive verbatim. The reported experience of the elderly was categorized into five themes which were formulated from the interviews, transcribed verbatim and each theme is described below:



### **Theme 1: Decline in cognitive functioning**

Almost all 8(100%) elderly in the group were having-understanding of their falling cognitive abilities. Most of them 5(62.5%) reported that their cognitive functioning started decreasing with increasing age. The subtheme identified under this theme showed majority of them 7(87.5%) have a weak memory, with decreased thinking abilities. They 3(37.5%) stated that now they were not able to take decisions easily like previously, and were 4(50%) having poor problem-solving skills. Furthermore, they 7(87.5%) feel helpless as were unable to manage changes with this decline and feel frustrated. Elderlies were not happy with these changes as they 4(50%) face a lot of difficulty but considering it part of their aging.

#### **Quotes related to Theme 1**

One of the elderly stated “Yes there are changes and I can feel these changes. These days I forget things, and not able to recall for a long time. I became helpless and I know my age is only responsible for this.”

“I feel there is a decline in my cognitive abilities. I cannot work like I was doing in young age.” (Looks sad and helpless)

### **Theme 2: Change in personal, family and social life**

Majority 6(75%) of the participants shared that this cognitive decline has disturbed their daily routine as their performance has been decreased. It also had an adverse impact on their relationships with their families and in community. The subtheme under this stated that majority 7(87.5%) of them have change role in family and society. They were very concerned about these changes. The most common response 5(62.5%) quoted from them was stress, frustration, and conflict in their life due to decline in cognitive abilities which also leads to poor social life. The other issues discussed by 2(25%) elderly were that they

need assistance from their caregiver to manage their routine care activities, health related care and medicinal care.

### **Quotes related to Theme 2**

Some elderly said “My role in family has been changed, and now I am not able to take much responsibilities.” (Looks worried)

“There is a disturbance in daily routine. It’s not same as before. Now my social life also has been changed and there are more conflicts in the family due to these changes.”

### **Theme 3: Perception of decline**

Majority 7(87.5%) of the participants cited that they understand the symptoms of their decline in cognitive abilities. The identified subtheme under this theme stated that majority 7(87.5%) of elderlies were worried about these declines. They feel much of a difference from their young life. Not only psychologically but also physically they 3(37.5%) felt exhausted and had no energy to do work. Half of 4(50) % the elderly accepted it as part of age while other half of them 4(50%) blamed age negatively for these changes and all 8(100%) of the elderlies were frustrated because of these declines.

### **Quotes related to Theme 3**

One of the elderly said “Yes these are bodily changes. I understand these signs and symptoms but I can’t do anything.” (Look sad and worried)

“It’s because of my old age only. Yes, I am feeling these changes in my body and because of age I am becoming useless”.

### **Theme 4: Partially dependent**

Under this theme elderly almost all 8(100%) revealed that due to these diminishing abilities they were not able to perform all their routine or basic activities of life by themselves. The subtheme also described that 4(50%) stated that for some of the activities they were self-

dependent but for others they 2(25%) need family support like in managing expense relating to health and medicines. Elderly 2(25%) stated that they try to balance with capabilities as they do not want to be a burden. Majority of 6(75%) stated that their families are supportive and they get support from the family. About 4(50%) of the elderly take help of their son and daughter-in-law, while 2(25%) were dependent upon spouse and rest 2(25%) were taking help from their daughters.

#### **Quotes related to Theme 4**

Some elderly stated “Many thoughts come to my mind like how age can make you depend on others. I can’t do my all activities by myself I need help from my family.”

“My daughter-in law gives me food and washes my clothes; rest most activities I try to do by myself.” (Express with confidence)

#### **Theme 5: Mixed coping technique**

While discussing about coping strategies almost all 8(100%) agreed that being patient is the best way to deal with it along with having faith in God. Nearly 5(62.5%) said they used to repeat, as well as practice their tasks and activities to remember them, while other 3(37.5%) along with repeating also used to write the things they need to retain them in memory. Only 1(12%) of them said they follow their ideals like Plato, and Mahatma Gandhi etc.

#### **Quotes Related to Theme 5**

Some of the elderly said “I know this is an age of change and I have to be very patient for this. Also, for this I trust my God. He is there to help me. Rest, for my help I used to write about important things which I need to remember, as I have one diary for this.”

“I become irritated with these life changes. But I pray my God to gain strength to face these changes.

**Table 3: Qualitative analysis (Themes generated in the group of elderly’s care-givers)**

<b>Themes</b>	<b>Sub-themes</b>	<b>Supportive Verbatim</b>
Decline in cognitive functioning	<ul style="list-style-type: none"> <li>a) Diminishing memory and comprehensive thinking</li> <li>b) Leads to rigidity and irritation</li> <li>c) Exhibits childish and aggressive behaviour</li> </ul>	<p>“If I compare them with their young age there are numerous changes, like they can’t remember things now</p> <p>“They are not able to take decisions easily and due to this they behave like an irritated child.”</p>
Disturbed life and relationships	<ul style="list-style-type: none"> <li>a) Feeling frustrated due to change in routine</li> <li>b) Needs to denote more time and attention to them</li> <li>c) Conflict in family relations</li> </ul>	<p>“Yes, not only their but also our life has been affected”</p> <p>“There are issues in family related to them.”</p>
Understanding of decline	<ul style="list-style-type: none"> <li>a) Visualizing changes and showing concern about them</li> <li>b) Considering age responsible</li> <li>c) Unavoidable so prepared self.</li> <li>d) Observing signs and symptoms in their behaviour</li> </ul>	<p>“Yes, I can see changes in my father’s cognitive abilities, he is not like previously he was,</p> <p>“I understand these changes and try to adjust with these changes as it is part of their age.”</p>
Dual coping technique	<ul style="list-style-type: none"> <li>a) Caring and helping towards them</li> <li>b) Try to adapt as much as possible</li> <li>c) It’s our personal responsibility</li> <li>d) Practice sympathetic attitude</li> </ul>	<p>“I can understand their symptoms and problems but except helping them what else I can do.”</p> <p>They are our parents and it’s our responsibility too.”</p>
Adverse effects	<ul style="list-style-type: none"> <li>a) Demand double care</li> <li>b) Needs more strength and resources</li> <li>c) Feels irritated, bounded and emotional</li> <li>d) Challenging task.</li> </ul>	<p>“I feel so stressed sometime that I wish to run away as I can’t do anything for this.”</p>

Table 3 shows the various themes and sub-themes identified in the Focused Group Discussion of elderly's caregivers which was done to explore problems they faced due to decline in cognitive abilities of their elderly, along with supportive verbatim. The reported experience of the elderly's caregiver was categorized into five themes which were formulated from the interviews, transcribed verbatim and each theme is described below.

### **Theme 1: Decline in cognitive functioning**

Almost all 8(100%) caregivers of the elderly reported about various signs and symptoms related to decline in cognitive abilities of the elderly. They 3(37.5%) were aware about the changes in their elderly due to decreasing cognitive abilities. The identified subthemes by their responses were decreasing memory, thinking, and ability to solve problems also supported the theme. Majority 6(75%) of the participants cited due to these decline elderlies have behavioral issues, like they become rigid and irritating. The subthemes identified under this theme were showed that majority of elderly's caregiver feels changes in their behavior. One of the interviewees said that his father even starts behaving like an aggressive kid.

#### **Quotes related to Theme 1**

Some of the caregivers said "I can visualize changes in my father, as his memory and attention are not same. He even sometime forgets the basic things also, like names of family members."

"Yes, mentally as well as physically, they become weak, and due to these changes sometimes they behave like an irritated child." (Looks down while talking)

### **Theme 2: Disturbed life and relationships**

Majority of caregivers 5(60%) were agreed that due to decline in cognitive abilities of their

elderly, there was a disturbance in their daily routine, also it has disturbed their relationship pattern with them. Sometime it's become really difficult to manage their issues and other work. As they 2(25%) stated that they need to devote more time towards their elderly. Some 3(37.5%) of the caregivers reported that always there was stress and conflict in the family because of the weakened cognitive status and many time they 2(25%) have no idea how to proceed. A few 1(12%) member reported that they feel these changes in their elderly as a burden on them.

### **Quotes related to Theme 2**

One of the caregivers stated "Sometimes I am not able to go to my job on time, as I have to take care of my father. His cognitive fall has disturbed my personal and professional life."

"Many times, my wife fights with me because of my mother's condition, it has affected our life badly." (Caregiver looks upset)

### **Theme 3: Understanding of decline**

Majority 6(75%) of participants reported that they have knowledge of symptoms of poor cognitive functioning in their elderly. They 3(37.5%) described that they had observed it in their daily routine activities. The subtheme under this theme narrated that most of the caregivers 7(87.5%) can visualize these changes and also cited that they can sense these changes in their behaviour. Besides this, all 8(100%) agreed that increasing age has built these symptoms in them and it is not their fault.

### **Quotes related to Theme 3**

Some of the caregivers said "With increasing age they become weak, we do understand that this is not in their hand."

"Yes I do understand the signs of falling cognition, but I know it is an age- related process."  
(Caregiver looks confident)

#### **Theme 4: Dual coping technique**

While discussing about coping strategies to deal with the decline in cognitive abilities of their elderly majority 7(87.5%) of group participants agreed that helping them was their responsibility and they do it with patience. Some 3(7.5%) participants also confessed that they feel sympathy for them as they became helpless and they can't ignore them as they are their parents. Half of them 4(50%) stated that their elderly can expect help and care from them and they cannot deny it as it is their duty to support them.

#### **Quotes related to Theme 4**

One of the caregivers stated "We have to accept them as they are helpless and need our support."

"I think helping them is the best solution we can adopt" (Looks confident)

#### **Theme 5: Adverse effects**

Almost all caregivers stated that decline cognitive status of elderly has unfavourable impact on their personal and social life. Half of 4(50%) caregiver categorized it as stressful experience and other half said they feel irritated due to it. They 3(37.5%) also expressed it as a challenging task for them and they cannot ignore this. Majority (87.5%) of them agreed that they have to accept these changes. But overall, there are adverse effects of this on their life as well as relationships. Some 2(25%) of the caregiver also narrated issues related to work, time, finance, and resources.

#### **Quotes related to Theme 5**

One caregiver expressed "In office also I had tension of my home regarding this, which also affected my performance."

"Yes life has become difficult. Some time I feel it like a burden."

## Section II 2.2: Effectiveness of Nurse Led Cognitive Stimulation Program (NLCSP) on cognitive functions among elderly

**H<sub>01</sub>:** There would be no significant improvement in the cognitive functions of the elderly after undergoing Nurse Led Cognitive Stimulation Program as measured by Mini Mental State Examination.

**Table 4: Pre-test level of cognitive functions score of elderly in experimental and control groups**

Cognitive function score	Experimental Group (n=50)		Control Group (n=50)		$\chi^2$	df	p values
	f	%	f	%			
No cognitive impairment (24-30)	0	0%	0	0%	3.60	1	0.16
Mild cognitive impairment (18-23)	37	74%	28	56%			
Severe cognitive impairment (0-17)	13	26%	22	44%			

\*= chi-square test at p <0.05

Table 4 reveals assessment of pre-test cognitive function score among elderly in control and experimental group. Nearly one third of the elderly 37(74%) in experimental group and more than half 28(56%) in control group were having mild cognitive impairment. While 13 (26%) elderly in study group and 22(44%) in non-study group were having severe cognitive impairment. In both groups not a single participant fell in the category of no cognitive impairment.

Chi square test has been performed to find out homogeneity in between both groups regarding the cognitive functions score. There was no significant difference between groups



and were found homogeneous in terms of cognitive function score, suggesting that both groups were from the same population. Therefore, any changes in the cognitive functions score could be considered as due to Nurse Led Cognitive Stimulation Program (NLCSP) as an intervention.

**Table 5: Post-test level of cognitive functions score of elderly in experimental and control groups**

Cognitive function score	Experimental Group (n=50)		Control Group (n=50)	
	f	%	f	%
<b>No cognitive impairment (24-30)</b>	18	36%	0	0%
<b>Mild cognitive impairment (18-23)</b>	32	64%	29	58%
<b>Severe cognitive impairment (0-17)</b>	0	0%	21	42%

Table 5 shows the post-test cognitive functions score among elderly. Most of the elderly 32(64%) in experimental group and 29(58%) in control group were found having mild cognitive impairment, whereas 18(36%) elderly were having no cognitive impairment in experimental group after intervention. However, the result remains same as of pre-test score for control group in this category. No elderly in experimental group were having severe cognitive impairment when compared with control group, whereas 21(42%) were identified as having severe cognitive impairment.

**Table 6: Comparison of pre and post-test level of cognitive functions score within and between groups of elderly in experimental and control group**

Cognitive function score	Pre-test Mean±SD	Post-test Mean±SD	Paired 't' test	p value
Experimental Group (n=50)	19.1±2.48	22.1±1.92	11.30	<0.001**
Control Group (n=50)	18.1±2.98	17.70±2.77	1.617	1.98
Unpaired 't' test	1.96	9.263		
p value	0.05	<0.001**		

**\*\*highly significant at p<0.001**                      unpaired 't' test, at df=98                      paired 't' test, at df=49

Table 6 reveals that mean post-test cognitive functions score (22.1±1.92) of experimental group was higher than the mean pre-test cognitive functions score (19.1±2.48). The calculated 't' value of 11.30 within the experimental group was greater than the table value of 1.67 at 0.05 level of significance. While comparing between groups, the mean post-test cognitive functions score of elderly in experimental group were higher (22.1±1.92) than the control group (17.7±2.77). Further, the calculated 't' value 9.263 was greater than the table value of 1.66 at 0.05 level of significance. Therefore, the null hypothesis H<sub>0</sub> was not accepted and research hypothesis H<sub>1</sub> was accepted.

However, the significant difference in cognitive function scores of elderlies is attributed to the Nurse Led Cognitive Stimulation Program (NLCSP) provided as an intervention as measured by Mini Mental State Examination. Also from the above findings it could be

inferred that the Nurse Led Cognitive Stimulation Program (NLCSP) was an effective technique to improve the cognitive functions of the elderly.

**Table 7: Comparison of cognitive functions score within and between the groups before and after Nurse Led Cognitive Stimulation Program by using r-ANOVA and independent t-test**

Study Group	Pre-test	Post-test 1	Post-test2	Post-test 3	ANOVA F-test	p value
		(Immediate) (n=100)	(After 3 months) (n=100)	(After 1 year) (n=92)		
<b>Experimental Group</b>	19.1±2.48	22.1±1.92	23.0±1.73	23.4±1.71	85.51	<0.001**
<b>Control Group</b>	18.1±2.98	17.7±2.77	17.6±2.68	17.1±2.74	0.28	0.840 (NS)
<b>t test</b>	1.96	9.26	11.97	11.91		
<b>p value</b>	0.05	<0.001**	<0.001**	<0.001**		

**\*\*highly significant at p<0.001**

**NS=Not significant**

Table 7 depicts the average increase in cognitive function score in experimental group from pretest (19.1±2.48) to post-test 1 (22.1±1.92), post-test 2 (23.0±1.73), and further for post-test 3 (23.4±1.71), at immediate, 3 months and 1 year follow up, was greater than the control group in pre-test (18.1±2.98), post-test 1 (17.7±2.77), post-test 2 (17.6±2.68), and post-test 3 (17.1±2.74), respectively. Analysis by repeated measure ANOVA within experimental group F (85.51) was showing the statistical significance. Whereas calculated F (0.28) in control group was lower than the tabulated F-ratio. This indicates that the

treatment modalities had a significant effect on cognitive function at  $p < 0.001$  as found in experimental group.

Also, while comparing between groups unpaired t test was used and the calculated t values for post-test 1 (9.26), post-test 2 (11.97) and post-test 3 (11.91) was higher than the table value, and shows significant differences at  $p < 0.001$  level of significance.

Hence the null hypothesis ( $H_{01}$ ) was rejected and research hypothesis ( $H_1$ ) was accepted and it is concluded that there was a significant improvement in the cognitive function of the elderly after undergoing Nurse-Led Cognitive Stimulation Program.

**Section II 2.3: Effectiveness of Nurse Led Cognitive Stimulation Program (NLCSP) on quality of life among elderly.**

**H<sub>02</sub>:** There would be no significant improvement in the quality of life of elderly after undergoing Nurse Led Cognitive Stimulation Program as measured by QOL-AD Scale of Quality of Life.

**Table 8: Pre-test level of quality of life score of elderly in experimental and control groups**

Quality of life score	Experimental Group (n=50)		Control Group (n=50)		$\chi^2$	df	p values
	f	%	f	%			
<b>Good (40-52)</b>	0	0%	0	0%	0.64	1	0.42
<b>Average (27-39)</b>	25	50%	30	60%			
<b>Poor (13-26)</b>	25	50%	20	40%			

**\*= chi-square test at p <0.05**

Table 8 exhibits pre-test quality of life (QOL) score among elderly in control and experimental group. In pre-test in both groups not a single participant fell in the category of good score of quality of life. Participants of both groups were predominantly having average quality of life, in experimental group 25(50%) and in control group 30(60%). Half of the elderly 25(50%) in experimental group were having poor quality of life while 20(40%) in control group were in this category.

Chi square test has been performed to find out homogeneity in between both groups regarding the score of quality of life. The results showed that there was no significant difference between groups, and both groups were found homogeneous in terms of quality of life score, suggesting that elderly in both groups were from the same population. Therefore, any changes in the results could be considered as due to Nurse Led Cognitive Stimulation Program as an intervention.

**Table 9: Post-test level of quality of life scores in experimental and control groups**

Quality of life score	Experimental Group (n=50)		Control Group (n=50)	
	f	%	f	%
<b>Good (40-52)</b>	4	8%	0	0%
<b>Average (27-39)</b>	46	92%	30	60%
<b>Poor (13-26)</b>	0	0%	20	40%

Table 9 exhibits that post intervention, for quality of life in experimental group 4(8%) were having good quality of life whereas none of elderly in control group were found in this category. Although 46(92%) of the elderly in study group were having average quality of life, but in the control group, the score remained same as of pretest. Most of the elderly 30(60%) were having average and 20(40%) elderly were having poor quality of life.

**Table 10: Comparison of pre and post-test level of quality of life score within and between groups of elderly in experimental and control group**

Quality of life score	Pre-test Mean±SD	Post-test Mean±SD	Paired 't' test	p value
<b>Experimental Group (n=50)</b>	27.1±4.70	33.3±3.40	15.81	<0.001**
<b>Control Group (n=50)</b>	27.8±3.8	27.6±3.8	0.00	1.00
<b>Unpaired 't' test</b>	0.81	7.72		
<b>p value</b>	0.05	<0.001**		

**\*\*highly significant at p<0.001 unpaired 't' test, at df=98 paired 't' test, at df=49**

Table 10 reveals that the mean post-test quality of life score (33.3±3.40) of the elderly was higher than the mean pre-test quality of life score (27.1±4.70) within the experimental group. The calculated 't' value 15.81 within experimental group was greater than the table value of 1.67 at 0.05 level of significance. While comparing between the groups the mean post-test quality of life score of the elderly in the interventional group (33.3±3.40) and in the non-interventional group (27.6±3.87) significant difference was found and the calculated 't' value 7.72 was greater than the table value 1.66 at 0.05 level of significance. Therefore, the null hypothesis H<sub>0</sub> was rejected and the research hypothesis H<sub>2</sub> was accepted.

So, there was significant improvement in quality of life score of elderly attributed to the Nurse-Led Cognitive Stimulation Program (NLCSP) provided as an intervention, as measured by QOL-AD Scale of quality of Life. From the above findings it was also

concluded that the Nurse-Led Cognitive Stimulation Program was an effective technique to improve the quality of life of elderly.

**Table 11: Comparison of score of quality of life within and between the groups before and after Nurse Led Cognitive Stimulation Program by using r-ANOVA and independent t-test**

Study Group	Pre-test	Post-test 1	Post-test 2	Post-test 3	ANOVA F-test	p value
		(Immediate) (n=100)	(After 3 months) (n=100)	(After 1 year) (n=92)		
<b>Experimental Group</b>	27.1±4.70	33.3±3.40	34.0±3.40	34.3±3.42	215.5	<0.001**
<b>Control Group</b>	27.8±3.84	27.6±3.87	27.3±3.84	27.0±3.88	0.66	0.578 (NS)
<b>t test</b>	0.81	7.72	8.48	8.60		
<b>p value</b>	0.41	<0.001**	<0.001**	<0.001**		

**\*\*highly significant at p<0.001**

**NS= Not significant**

Table 11 reveals that the average increase of scores of quality of life in the experimental group from pre-test (27.1±4.70) to post-test 1 (33.3±3.40), post-test 2 (34.0±3.40) and further in post-test 3 (34.3±3.42), at immediate, 3 months and 1 year, was greater than control group in pretest (27.8±3.84), post-test 1 (27.6±3.87), post-test 2 (27.3±3.84) and post-test 3 (27.0±3.88), respectively. Analysis by repeated measure ANOVA within treatment group F (215.5) showed statistical significance whereas the calculated F (0.66) in



the control group was less than the tabulated F-values. This proves that Nurse Led Cognitive Stimulation Program had a significant effect in improvement in the quality of life of elderly at  $p < 0.001$  as found in experimental group.

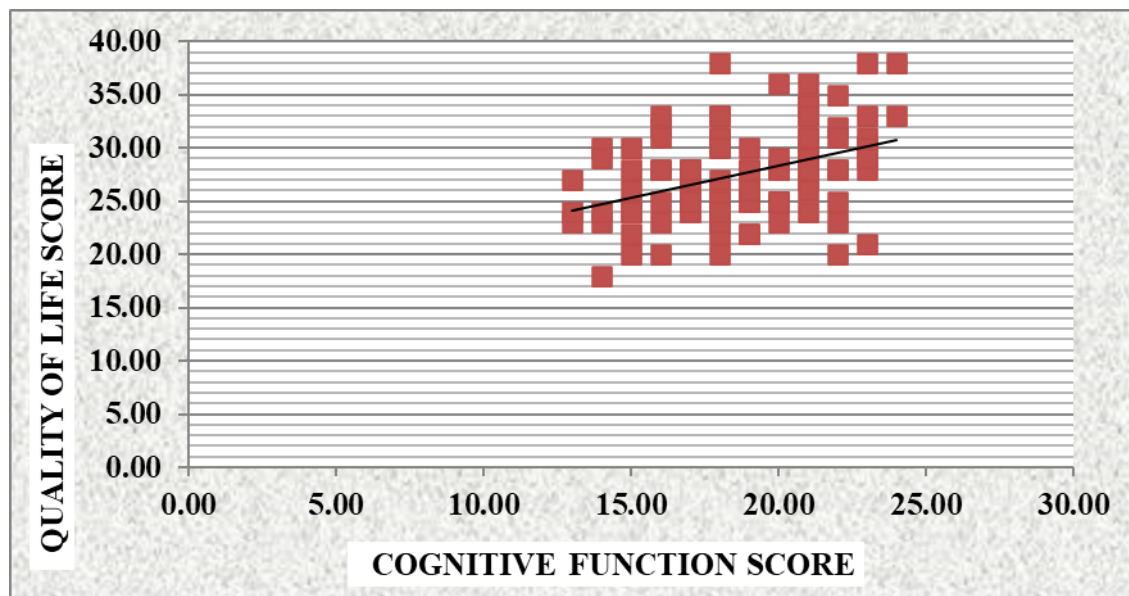
Also, while comparing between groups, unpaired t test was used and the calculated t values for post-test 1 (7.72), post-test 2 (8.48), and post-test 3 (8.60), were higher than the table value and showed significant differences  $p < 0.001$  in between groups.

Hence the null hypothesis ( $H_{02}$ ) was not accepted and research hypothesis ( $H_2$ ) was accepted and it was inferred that there was a significant improvement in the quality of life of the elderly after undergoing Nurse-Led Cognitive Stimulation Program as measured by QOL-AD scale for quality of life.

## Section II: 2.4 Correlation between cognitive functions and quality of life among elderly in selected rural community

**H<sub>03</sub>:** There would not be any co-relation in between cognitive function and quality of life score of elderly.

**N=100**



**r = 0.38 p < 0.001**

**Figure 5: Scatter diagram showing correlation among scores of cognitive functions and quality of life**

Figure 3 illustrates the correlation between cognitive function and quality of life scores of the elderly. Karl Pearson r value found for the test was 0.38 which indicates a moderate positive correlation between scores.

Hence the null hypothesis (H<sub>03</sub>) was rejected and research hypothesis (H<sub>3</sub>) was accepted and it was interpreted that the elderly's cognitive functions and quality of life were positively correlated.

**Section II: 2.5 Association of cognitive functions score with selected socio-demographic variables**

**Table 12: Association between scores of cognitive functions and selected socio-demographic variables**

**N=100**

Socio-demographic variables		Cognitive functions score				
Variables	Categories	Mild cognitive impairment	Severe cognitive impairment	Fisher's Exact/ $\chi^2$ test	df	P value
<b>Age (in years)</b>	60-65 years	24	11	6.066	3	0.416
	66-70 years	30	18			
	71-75 years	11	4			
	More than 75 years	0	2			
<b>Gender</b>	Male	41	23	0.542	1	0.763
	Female	24	12			
<b>Educational status</b>	No Formal Education	17	11	11.61	4	0.312
	Primary Education	24	13			
	Senior Secondary Education	14	9			
	Higher Secondary	9	1			
	Graduate & above	1	1			
<b>Occupational status</b>	Private Job	13	4	12.27	3	0.267
	Business	15	6			

	Agriculture	22	11			
	Unemployed	15	14			
<b>Financial dependency status</b>	Work	42	18	7.715	3	0.260
	Pension	0	1			
	From Family	22	15			
	Other Relative	1	1			
<b>Marital status</b>	Single	2	1	4.75	2	0.313
	Married	42	28			
	Widow/ Widower	21	6			
<b>Type of family</b>	Joint	45	23	0.863	1	0.650
	Nuclear	20	12			
<b>Currently any diseases</b>	Yes	29	20	2.694	1	0.260
	No	36	15			
<b>Any care giver</b>	Yes	58	32	0.483	1	0.785
	No	7	3			
<b>Any previous exposure to such program</b>	No	65	35	-	-	-

**\*Significant at 0.05 level**

Table 12 shows the association between the cognitive function score and socio-demographic variables of the elderly. Fisher's exact test and chi square was used to find out the association. The findings have shown that there was no significant association of cognitive function score with any of the selected demographic variables at 0.05 level of significance.

**Section II: 2.6 Association of scores of quality of life with selected demographic variables**

**Table No: 13 Association between scores of quality of life and selected socio-demographic variables.**

**N=100**

Socio-demographic variables		Quality of life score				
Variables	Categories	Poor	Average	Fisher's Exact/ $\chi^2$ test	df	p value
<b>Age (in years)</b>	60-65 years	12	23	10.1	3	<0.01*
	66-70 years	29	19			
	71-75 years	3	12			
	More than 75 years	1	1			
<b>Gender</b>	Male	31	33	0.84	1	0.35
	Female	14	22			
<b>Educational status</b>	No Formal Education	13	15	3.48	4	0.62
	Primary Education	18	19			
	Senior Secondary Education	10	13			
	Higher Secondary	3	7			
	Graduate & above	1	1			
<b>Occupational status</b>	Private Job	7	10	3.91	3	0.56
	Business	9	12			
	Agriculture	14	21			
	Unemployed	15	12			
	Work	23	37			
	Pension	1	0			

<b>Financial dependency status</b>	From Family	19	18	4.88	3	0.18
	Other Relative	2	0			
<b>Marital status</b>	Single	0	3	3.42	2	0.18
	Married	35	35			
	Widow/ Widower	10	17			
<b>Type of family</b>	Joint	31	37	0.03	1	0.86
	Nuclear	14	18			
<b>Currently any diseases</b>	Yes	21	28	0.17	1	0.67
	No	24	27			
<b>Any care giver</b>	Yes	39	51	1.01	1	0.31
	No	6	4			
<b>Any previous exposure to such program</b>	No	45	55	-	-	-

**\*Significant at 0.05 level**

Table 13 shows the association between the quality of life score and socio-demographic variables of the elderly. Fisher's exact test and chi square test was used to find out the association. The findings have shown that, among all socio-demographic variables, only age was significantly associated with quality of life score at 0.05 level of significance. Rest all other variables were insignificantly associated.

Hence, it is inferred that the age is having an impact on the quality of life. Further, particularly the age category of young old has better quality of life than the middle and oldest because with decline in age physical and cognitive abilities also fall considerably.

Hence the null hypothesis ( $H_{04}$ ) was not accepted and the research hypothesis ( $H_4$ ) was accepted.

## **Summary**

This chapter has dealt with the analysis and interpretation of the data collected during the study. Frequencies and percentages were used to analyze the sample characteristics. One-way ANOVA was used to compare the effectiveness within the group and an unpaired 't' test was used to compare the effectiveness between the groups. Chi square and Fisher's exact test was used to find the association between the treatment modalities and selected demographic variables.