CHAPTER 6

RESULTS

6.0 RESULTS

One hundred-twenty-four paraplegic patients participated in the study. The baseline mean age difference between groups was IYP = 33.97 ± 10.0 years and PT = 32.84 ± 9.5 years {p = 0.519 (independent t-test)}. The distribution of gender (p = 0.636, $\chi 2$ test) was not significantly different between the two groups. The characteristics and socio-demographic information of study participants are presented in Table 8.

Table 8: Characteristics of the study participants.

MEASUREMENTS	CATEGORIES	IYP	PT
Age (Mean ± SD)		33.97±10.002	32.84±9.465
Gender	**Male**	54	53
	Female	08	09
Languages Known	**Hindi**	49 (79.03%)	55 (88.88%)
	English	28 (45.16%)	35 (56.45%)
	Odiya	50 (80.64%)	52 (83.87%)
	Others	31 (50%)	24 (39.36%)
Mechanism of Injury	**Fall from Height**	30 (48.19%)	24 (39.15%)
	Fall of Weight	06 (9.67%)	10 (15.52%)
	Motor Vehicle Accident	19 (30.64%)	24 (38.33%)
	Miscellaneous	07 (11.5%)	04 (07.2%)
Educational level	**0–9 years**	09(14.52%)	04 (6.45%)
	10–12 Years	48 (77.42%)	51 (82.26%)
	>12 Years	05 (8.06%)	07 (11.29%)
Occupational activity	**Employed**	25 (40.32%)	17 (27.42%)
	Light physical activity	18 (29.03%)	22 (35.48%)
	Moderate/heavy physical activity	15 (24.19%)	21 (33.87%)
	Unemployed	4 (6.45%)	2 (3.23%)
Marital Status	**Married**	35(56.45%)	42(67.74%)
	Unmarried	23(37.09%)	14(22.58%)
	Divorcee	04(6.45%)	06(9.68%)
Neurological Level of Injury	**$T_2 – T_5$**	23 (37.097%)	25 (40.32%)
	$T_6 – T_9$	22 (35.48%)	20 (32.26%)
	$T_{10} – L_1$	17 (27.42%)	17 (27.42%)
ASIA Scale	**C**	45 (72.58%)	42 (67.74%)
	D	17 (27.42%)	20 (32.26%)

RESULTS OF OUTCOME MEASURES

Comparison for Walking Index for SCI (WISCI II) and Spinal Cord Independence Measure III (SCIM III) Variables

IYP group (within-group – pre-post) comparison: At the completion of one-month of add-on Integrated Yoga Therapy and Physiotherapy intervention, the results showed that there were significant improvement inscores of WISCI II (P<0.001), and SCIM III (P<0.001) compared to baseline.

Control (PT) group (within-group – pre-post) comparison: At the completion of one-month of Physiotherapy interventionalone, PT group also showed significant improvement in WISCI II (P<0.001), and SCIM III (P<0.001) compared to baseline.

Between-group comparison: After one-month, IYP group showed a significant increase in scores of WISCI II (P<0.001), and SCIM III (P<0.001) compared to PT group for post-assessment. Percentage change and effect size were larger in IYP group compared to the PT group.

Figure 9: Comparison of WISCI II score within the groups.

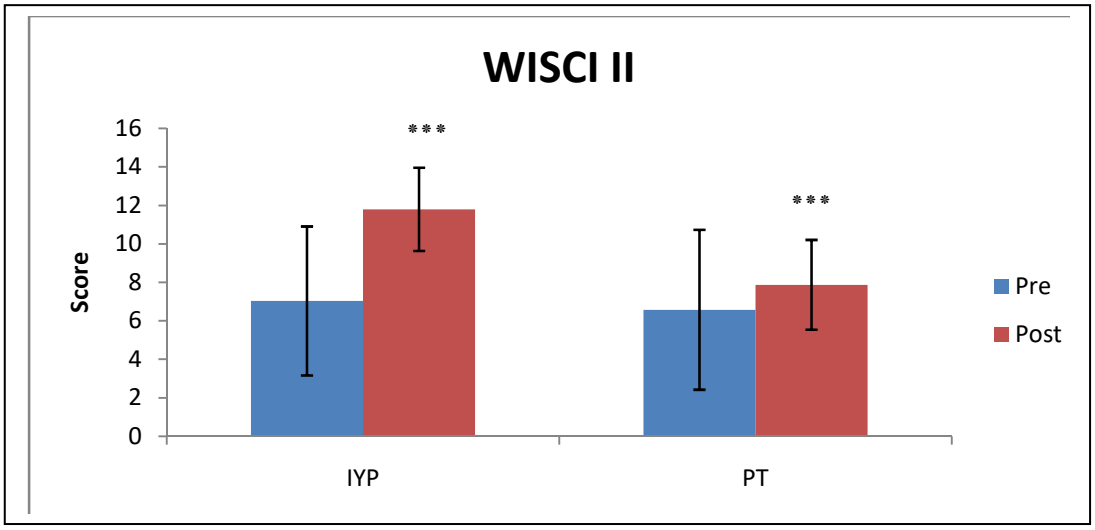
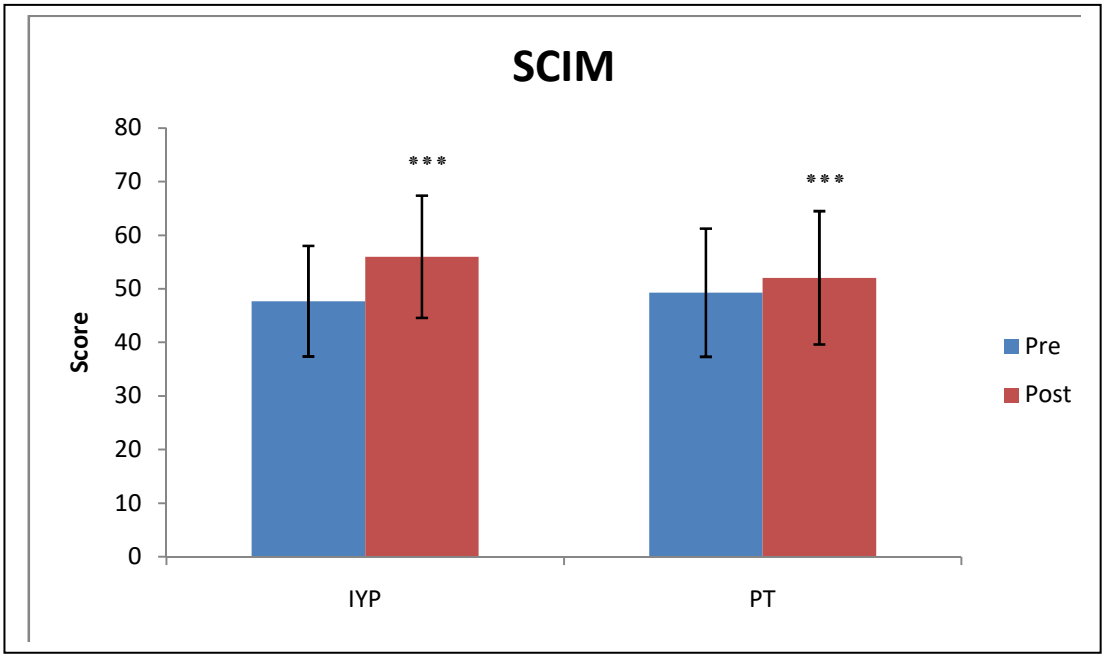


Figure 10: Comparison of SCIM score within the groups.



Legends: **P<0.05, ** P<0.01, *** P<0.001; Within-group: pre compared with post.*

Comparison for MPI-SCI, BMI and ESR Variables:

IYP group (within-group – pre-post) comparison: At the completion of one-month of add-on Integrated Yoga Therapy and Physiotherapy interventions, the results showed that there was significant improvement in MPI-SCI_S1 (P<0.001), MPI-SCI_S2 (P=0.003), MPI-SCI_S3 (P=0.001), BMI (P<0.001) and ESR(P<0.001), compared to baseline.

Control (PT) group (within-group – pre-post) comparison: At the completion of one-month of Physiotherapy interventionalone, there were significant improvement in scores of MPI-SCI_S1 (P<0.001), MPI-SCI_S3 (P=0.023), and BMI (P=0.012), but there was no significant improvement in scores ofMPI-SCI_S2 (P=0.544), and ESR(P=0.576), compared to baseline.

Between-group comparison: After one-month of intervention, between-group comparison showed that there was a significant difference in post scores of both the groups in the following assessments: MPI-SCI_S3 (P=0.003), and ESR(P<0.001). However, MPI-SCI_S1 (P=0.427), MPI-SCI_S2 (P=0.067), and BMI (P=0.475) scores were not significantly different. Percentage change and effect size were larger in IYP group compared to the PT group.

Figure 11: Comparison of ESR (mm/hr)within the groups.

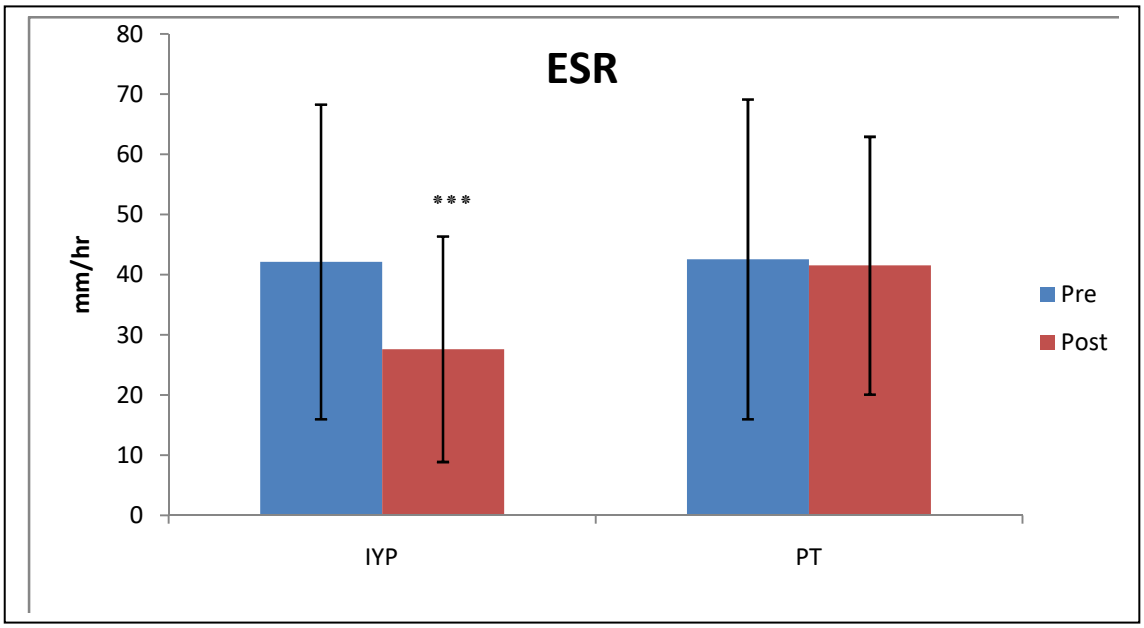
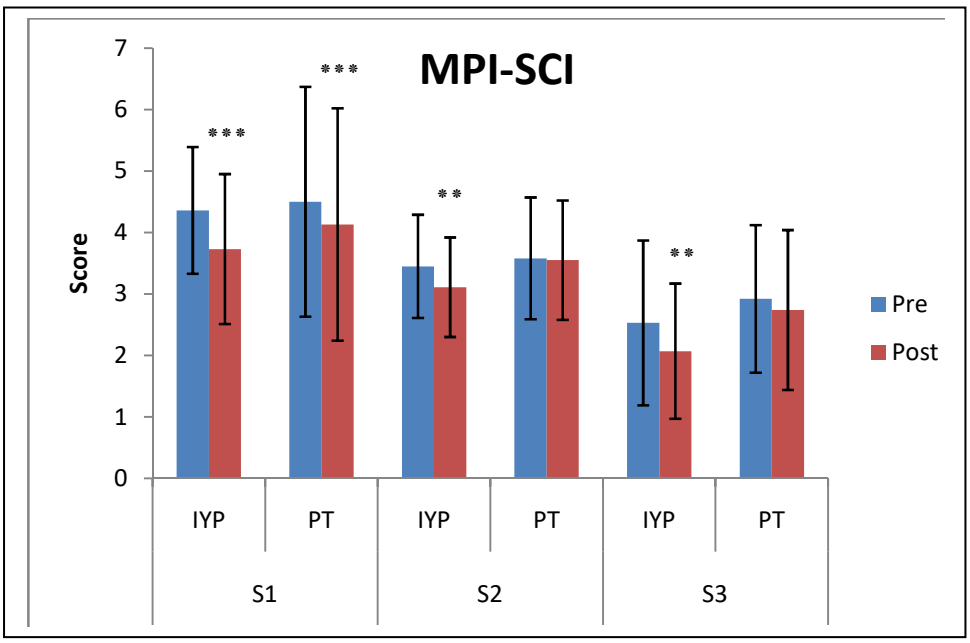
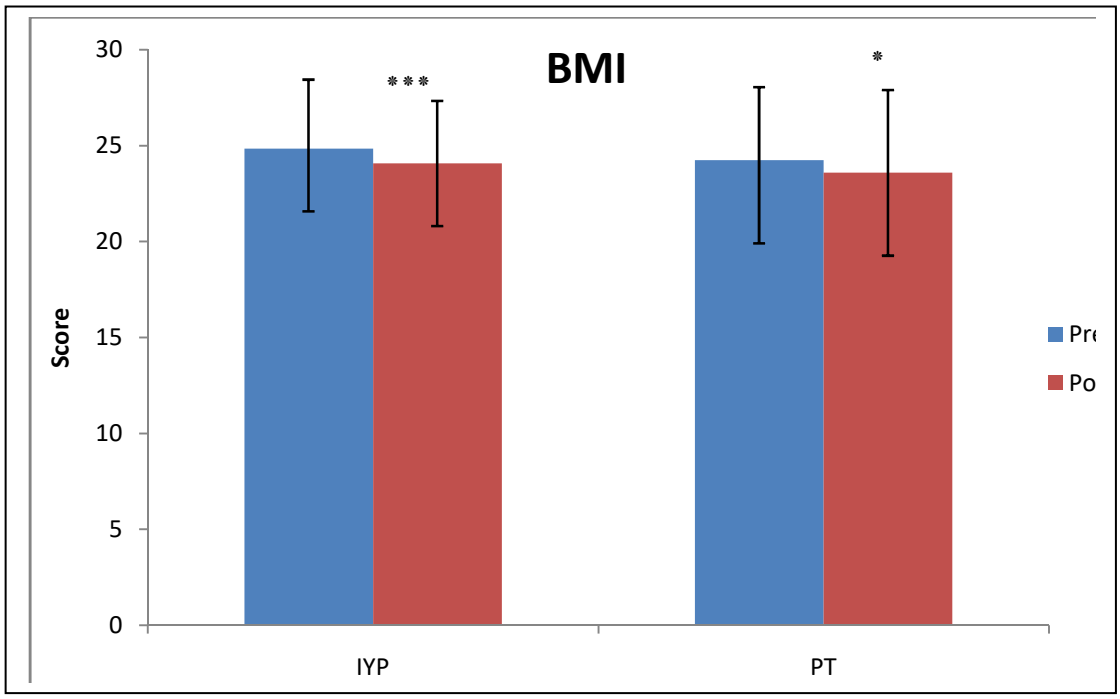


Figure 12: Comparison of MPI-SCI score within the groups.



Legends: **P<0.05, ** P<0.01, *** P<0.001; Within group: pre compared with post.*

Figure 13: Comparison of BMI score within the groups.



Legends: **P<0.05, ** P<0.01, *** P<0.001; Within-group: pre compared with post.*

Comparison for SCI-QoL Index and Medically Based Emotional Distress Scale (MEDS) Variables:

IYP group (within-group – pre-post) comparison: At the completion of one-month of add-on Integrated Yoga Therapy and Physiotherapy interventions, the results showed that there was significant improvement in scores of SCI-QoL Index (*P*<0.001), and MEDS (*P*<0.001) compared to baseline.

Control (PT) group (within-group – pre-post) comparison: At the completion of one-month of Physiotherapy interventionalone, there was significant improvement in scores of SCI-QoL Index (*P*<0.001), and MEDS (*P*<0.001) compared to baseline.

Between-group comparison: After one-month of intervention, between-group comparison showed that there was a significant difference in post scores of both the groups in the following assessments: SCI-QoL Index (*P*<0.001), and MEDS (*P*<0.001). Percentage change and effect size were larger in IYP group compared to the PT group.

Figure 14: Comparison of SCI-QoL Index score within the groups.

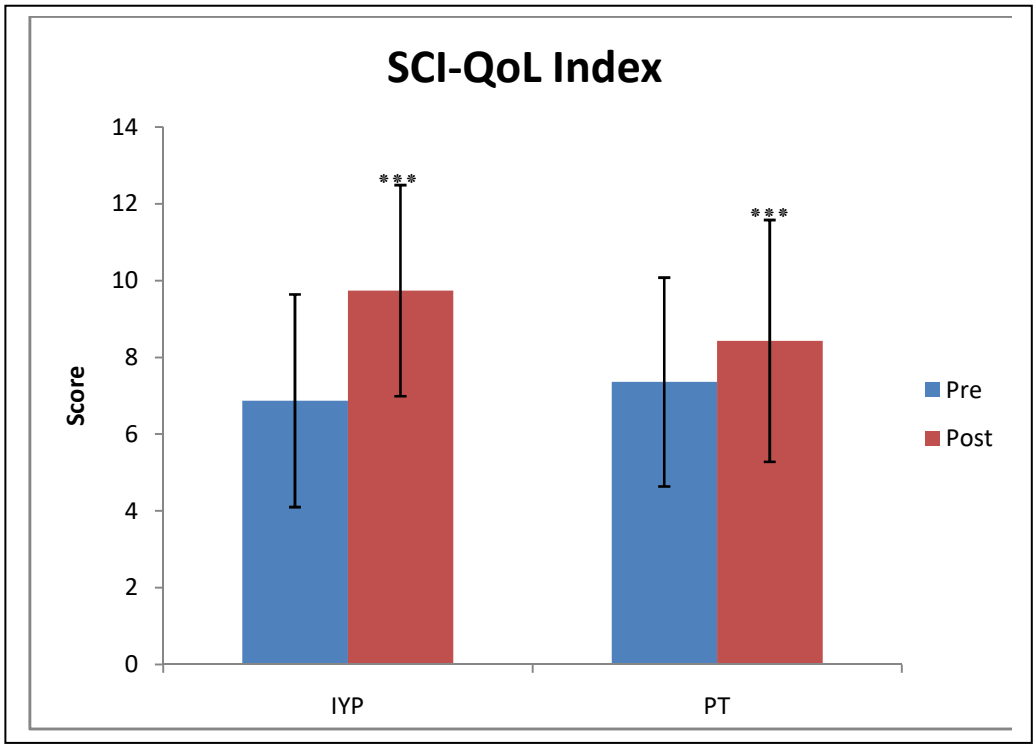
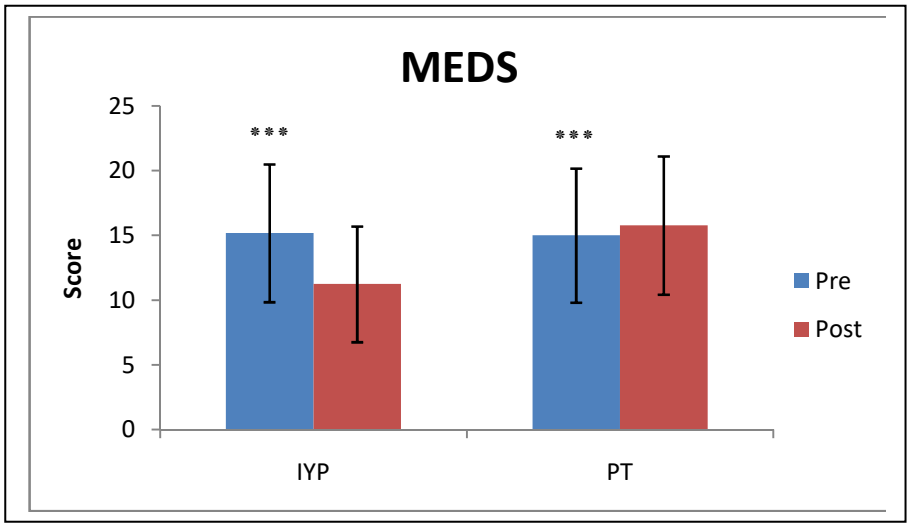


Figure 15: Comparison of MEDS score between the groups.



Legends:*P<0.05, ** P<0.01, *** P<0.001; Within group: pre compared with post.*

Comparison for ASIA, CRP and MMAS Categorical Variables:

IYP group (within-group – pre-post) comparison: At the completion of one-month of add-on Integrated Yoga Therapy and Physiotherapy interventions, the results showed that

there was significant improvement in scores ofCRP (P<0.001), ASIA(P<0.001), and MMAS (P<0.001) compared to baseline.

PT group (within-group – pre-post) comparison: At the completion of one-month of Physiotherapy interventionalone, there was significant improvement in scores ofCRP (P=0.035), ASIA(P<0.001), and MMAS (P<0.001), compared to baseline.

Between-group comparison: After one-month of intervention, between-group comparison showed that there was a significant difference in post scores of both the groups in the following assessments: CRP (P<0.001), and MMAS (P<0.001). However, ASIA(P=0.237) score did not show significant difference. Percentage change and effect size were larger in IYP group compared to the PT group.

Table 9: Within-group comparison of categorical variables of IYP and PT groups.

VARIABLES		IYP				PT			
		PRE	POST	TOTAL	χ^2 p-Value	PRE	POST	TOTAL	χ^2 p-Value
CRP	NEGATIVE	14(100%)	0(0.0%)	14(100%)	<0.001	11(64.7%)	06(35.3%)	17(100%)	=0.035
	POSITIVE	34(70.8%)	14(29.2%)	48(100%)		17(37.8%)	28(62.2%)	45(100%)	
ASIA	C	24(53.3%)	21(46.7%)	45(100.0%)	<0.001	30(71.4%)	12(28.6%)	42(100.0%)	<0.001
	D	14(100%)	14(100%)	14(100%)		0(0.0%)	20(100%)	20(100%)	

IYP						PT					
MMAS PRE	MMAS POST					MMAS PRE	MMAS POST				
		1	2	Total	X^2P-value		1	2	3	Total	X^2P-value
1	04 100%	0 0.0%	04 100%	<0.001		1	6 66.7%	2 22.2%	1 11.1%	9 100%	<0.001
2	25 83.3%	5 16.7%	30 100%			2	10 35.7%	15 53.6%	03 10.7%	28 100%	
3	07 26.9%	19 73.1%	26 100%			3	0 0.0%	17 68%	08 32%	25 100%	
4	0 0%	2 100%	2 100%			4	0 0.0%	0 0.0%	1 100%	1 100%	
Total	36 58.1%	26 41.9%	62 100%			Total	16 25.4%	34 54%	13 20.6%	63 100%	

Legends: CRP (c-Reactive Protein), American Spinal Injury Association (ASIA), and Modified Modified Ashworth's Scale (MMAS).

Mc-Nemar Test was used to analyze within the group differences in Categorical Variables.

Table 10: Between group comparison of categorical variables of IYP and PT groups.

CATEGORICAL VARIABLES							
VARIABLES		PRE1 (G1)	PRE2 (G2)	χ^2*P- value*	POST1 (G1)	POST2 (G2)	χ^2*P- value*
CRP	NEGATIVE	14 (22.58%)	17(26.98%)	0.569	48 (77.4%)	28 (44.44%)	< 0.001
	POSITIVE	48 (77.4%)	46 (72.01%)		14 (22.6%)	35 (55.56%)	
ASIA	C	45 (72.6%)	43 (68.25%)	0.596	24 (38.7%)	31 (49.2%)	0.237
	D	17 (27.4%)	20 (31.75%)		38 (61.29%)	32 (50.8%)	
MAS	1	4 (6.45%)	9 (14.3%)	0.505	36 (58.06%)	16 (25.4%)	< 0.001
	2	30 (48.4%)	28 (44.44%)		26 (41.9%)	34 (53.97%)	
	3	26 (41.9%)	25 (39.68%)		0	13 (20.6%)	
	4	2 (3.23%)	1 (1.6%)		0	0	

Chi-Square Test was used to analyze the group differences in Categorical Variables.

Between-group Comparisons

Between-group comparisons showed that there was a significant difference in post scores of both the groups in the following assessments: CRP (P<0.001), SCI-QoL Index (P<0.05), MEDS (P<0.001), WISCI II (P<0.001), ESR (P<0.001), MPI-SCI_S3 (P<0.01), and MMAS (P<0.001).However, ASIA (p=0.241), SCIM (P=0.069),MPI-SCI_S1 (P=0.427),MPI-SCI_S2 (P=0.067) and BMI (P=0.475) scores were not significantly different.

Table 13 and Table 14 represent the summary of within group (Pre-Post) and between groups' comparisons of all continuous and categorical outcome measures.

Table 11.The correlation between age and outcome variables.

The Pearson's correlation was done between age and outcome measures variables that showed a significant positive correlation between age and baseline ESR rate (mm/hr) [r=0.179; p<0.05] of participants recruited in the study. The correlation suggests that with increasing age, the ESR rate increases.

Correlation between Age and outcome measures

	Pearson's r	p
WISCI-II PRE	0.009	0.925
MAS PRE	0.170	0.057
BMI PRE	0.108	0.229
CRP PRE	-0.082	0.366
ESR PRE	**0.179**	**0.046**
SCI-QoL Index PRE	-0.175	0.051
SCIM PRE	-0.164	0.067
MPI-SCI PRE-S1	0.002	0.979
MPI-SCI PRE-S2	-0.067	0.455
MPI SCI PRE-S3	-0.110	0.223
MEDS PRE	-0.139	0.122

Correlation Plot

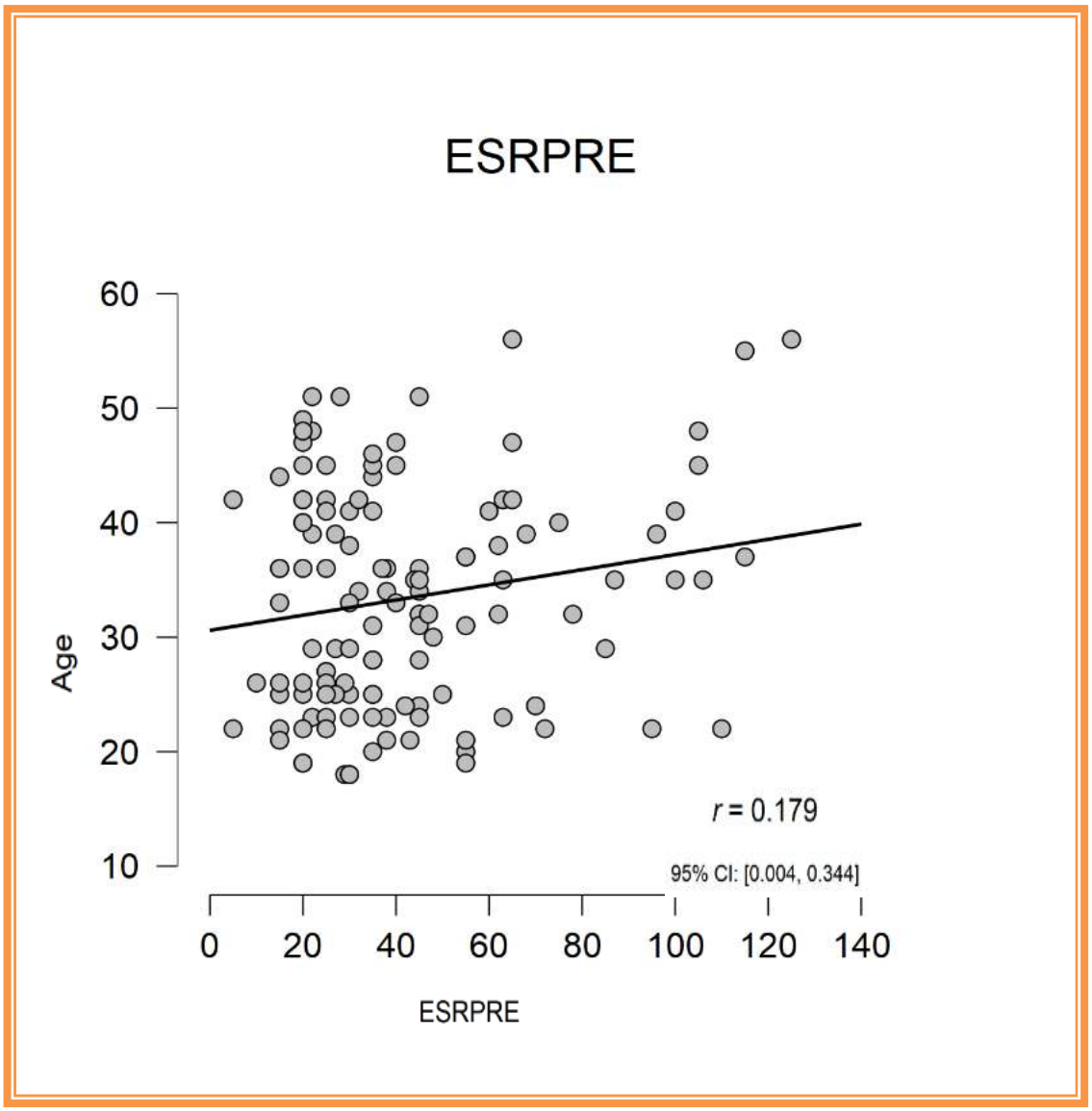


Table 13: Within group (Pre-Post) and between groups' comparisons of all continuous variables.

VARIABLES	IYP							PT							Between Groups	
	PRE		POST		% Change	*P*-value	ES	PRE		POST		% Change	*P*-value	ES	Pre (IYP) Vs Pre (PT)	Post (IYP) Vs Post (PT)
	Mean±SD	C.I. (LB to UB)	Mean±SD	C.I. (LB to UB)				Mean±SD	C.I. (LB to UB)	Mean±SD	C.I. (LB to UB)					
WISCI II	7.03±3.87	6.05 – 8.01	11.79±4.153	10.74 – 12.85	67.68	**0.000**	1.49	6.57±2.161	6.03 – 7.12	7.87±2.33	7.29 – 8.46	19.82	**0.000**	1.247	0.411	0.000
BMI	24.85±3.61	23.93 – 25.77	24.08±3.26	23.25 – 24.91	3.09	**0.000**	0.617	24.24±3.82	23.27 – 25.19	23.59±4.32	22.50 – 24.68	2.67	**0.012**	0.326	0.359	0.475
ESR	42.13±26.14	35.49 – 48.77	27.63±18.75	22.87 – 32.4	34.42	**0.000**	0.89	42.57±26.58	35.88 – 49.26	41.52±21.42	36.12 – 46.91	2.48	0.576	0.071	0.925	0.000
SCI-QoL	6.87±2.77	6.17 – 7.57	9.74±2.75	9.05 – 10.44	41.82	**0.000**	2.54	7.362±2.72	6.68 – 8.05	8.434±3.148	7.64 – 9.23	14.56	**0.000**	0.57	0.319	0.015
SCIM	47.69±10.32	45.07 – 50.35	55.97±11.42	53.07 – 58.9	17.35	**0.000**	1.16	49.27±11.96	46.26 – 52.28	52.05±12.44	48.91 – 55.18	5.64	**0.000**	1.092	0.432	0.069
MPI-SCI_S1	4.36±1.03	4.097 – 4.62	3.730±1.22	3.42 – 4.04	14.38	**0.000**	0.629	4.5±1.87	4.20 – 4.8	4.13±1.89	3.83 – 4.43	8.27	**0.000**	0.573	0.476	0.427
MPI-SCI_S2	3.45±0.84	3.23 – 3.66	3.112±0.812	2.90 – 3.32	9.69	**0.003**	0.409	3.58±0.99	3.33 – 3.82	3.55±0.97	3.31 – 3.8	0.75	0.544	0.065	0.097	0.067
MPI-SCI_S3	2.534±1.34	2.19 – 2.87	2.07±1.095	1.8 – 2.35	18.232	**0.003**	0.386	2.92±1.204	2.61 – 3.22	2.74±1.33	2.40 – 3.07	6.13	**0.023**	0.302	0.007	0.003
MEDS	15.18±5.32	13.83 – 16.53	11.24±4.47	10.10 – 12.37	25.96	**0.000**	0.805	15.0±5.18	13.7 – 16.31	15.78±5.34	14.43 – 17.12	5.18	**0.000**	0.487	0.847	0.000

Table 14: Within Group (Pre-Post) Comparison of ASIA, CRP and MMAS Categorical Variables:

	IYP			PT		
VARIABLES	**C.I. Pre**	**C.I. Post**	**ES**	**C.I. Pre**	**C.I. Post**	**ES**
ASIA	3.16 – 3.39	3.49 – 3.74	0.49	3.20 – 3.44	3.38 – 3.63	0.67
CRP	0.67 – 0.88	0.12 – 0.33	0.3	0.62 – 0.85	0.43 – 0.68	0.241
MMAS	2.25 – 2.59	1.29 – 1.55	0.621	2.10 – 2.47	1.78 – 2.12	0.608