Analysis Report

This report is structured as follows.

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Descriptive Statistics

In the evaluation of the differences between male and female participants across various health-related variables, the Mann-Whitney U test revealed significant findings in specific areas, particularly in the cognitive domain. It's important to note that the Mann-Whitney U test is a non-parametric test used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. It assesses whether the distributions of two groups are significantly different. The table below shows the mean scores for genders along with the results of Mann Whitneys tests.

Variable	Sex		U	p
	Male	Female		
T1 SF8 Physical Health	10	9.5	133	0.698
T1 SF8 Mental Health	8.483	9	144.5	0.987
T1 BSSS Subscale Perceived Support Emotional & Instrumental	29.893	30.7	125.5	0.606
T1 BSSS Subscale Need for Support	10.571	11.3	119	0.483
T1 BSSS Subscale Support Seeking	14.714	15.8	111.5	0.341
T1 BSSS Subscale Received Support	54.464	53.8	136	0.894
T1 BSSS Subscale Provided Support	49.318	50	75	0.918
T1 BSSS Subscale Protective Buffering Provider	15.826	15.286	77.5	0.882
T1 BSSS Subscale Protective Buffering Patient	13.536	12.8	133.5	0.828
Preoperative MOCA Total Score	3.281	2.333	89.5	0.063
Preoperative Score for MOCA "Visuospatial"	3	2	80	.035*
Preoperative Score for MOCA "Executive Function"	4.562	4.667	140	0.896
Preoperative Score for MOCA "Language"	4.906	4.778	120.5	0.418
Preoperative Score for MOCA "Attention"	2.406	1.667	113	0.319
Preoperative Score for MOCA "Memory"	5.531	5.222	89.5	.037*
T2 SF8 Physical Health	9.484	9.2	147.5	0.819
T2 SF8 Mental Health	9.032	7.4	114	0.211
T2 BSSS Subscale Perceived Support Emotional & Instrumental	30.194	30.8	140	0.62
T2 BSSS Subscale Need for Support	10.71	10.5	138	0.602
T2 BSSS Subscale Support Seeking	14.226	14.4	149	0.855
T2 BSSS Subscale Received Support	54.2	55.2	130.5	0.54
T2 BSSS Subscale Provided Support	49.75	48.5	39	0.553
T2 BSSS Subscale Protective Buffering Provider	15.826	15.286	77.5	0.882
T2 BSSS Subscale Protective Buffering Patient	13.536	12.8	133.5	0.828
Postoperative MOCA Total Score	3.344	2.5	114	0.134
Postoperative Score for MOCA "Visuospatial"	3.063	1.9	69.5	.005**
Postoperative Score for MOCA "Executive Function"	4.562	4	142	0.577
Postoperative Score for MOCA "Language"	5.344	4.3	104.5	0.077
Postoperative Score for MOCA "Attention"	2.594	2.5	153.5	0.844
Postoperative Score for MOCA "Memory"	5.562	5.4	137.5	0.421

Preoperative Score for MOCA "Visuospatial": A notable finding was observed in the preoperative score for the MOCA "Visuospatial" test. The mean score for males was 3.00, compared to 2.00 for females. This difference was statistically significant with a Mann-Whitney U value of 80 and a p-value of .035, suggesting a higher visuospatial ability in males preoperatively.

Preoperative Score for MOCA "Memory": Another significant result was seen in the preoperative score for the MOCA "Memory" test. Males had a mean score of 5.531, whereas females had a slightly lower mean of 5.222. The statistical analysis yielded a Mann-Whitney U value of 89.5 and a p-value of .037, indicating a significant difference in memory performance between genders before surgery.

Postoperative Score for MOCA "Visuospatial": Postoperatively, the MOCA "Visuospatial" test scores continued to show significant gender differences. The mean score for males was 3.063, while it was lower for females at 1.900. The Mann-Whitney U statistic was 69.5, and the p-value was highly significant at .005, reinforcing the preoperative findings and suggesting that this difference persisted after surgery.

The other variables, including both physical and mental health measures from the SF8 survey, and various subscales of the BSSS, did not show statistically significant differences between males and females based on the Mann-Whitney U test. For instance, the T1 SF8 Physical Health scores were 10.00 for males and 9.50 for females, with a U value of 133 and a p-value of 0.698, indicating no significant gender difference.

Analyzing the data based on the preoperative PHQ9 threshold for mild depression reveals insightful trends in certain health-related measures. The Mann-Whitney U test was applied here to explore differences between patients with PHQ9 scores below 5 (indicating lesser symptoms of depression) and those with scores above 4 (indicating more significant symptoms).

	preoperative phq9 - threshold for mild depression		U	p
	<5	>4		
T1 SF8 physical health	6.133	12.208	18	0.000
T1 SF8 mental health	6	10.25	29	0.000
T1 BSSS subscale percieved support emotional and instrumental	30.6	29.783	151	0.491
T1 BSSS subscale need for support	10.933	10.652	165.5	0.833
T1 BSSS subscale support seeking	15.4	14.739	152	0.537
T1 BSSS subscale received support	53.933	54.522	163	0.776
T1 BSSS subscale provided support	49.083	49.688	82	0.514
T1 BSSS subscale protective buffering provider	15.833	15.529	94	0.722
T1 BSSS subscale protective buffering patient	12	14.217	105	0.042
preoperative moca totalscore	3.533	2.739	108	0.036
preoperative score for subtest of moca "visuospatial"	2.8	2.783	169.5	0.925
preoperative score for subtest of moca "executive function"	5.133	4.391	122	0.117
preoperative score for subtest of moca "language"	5.133	4.783	153	0.520
preoperative score for subtest of moca "attention"	2.467	2.304	164.5	0.808
preoperative score for subtest of moca "memory"	5.733	5.348	150.5	0.422
T2 SF8 physical health	8.333	10.174	122.5	0.133
T2 SF8 mental health	7.4	9.435	125.5	0.158
T2 BSSS subscale percieved support emotional and instrumental	30.6	30.174	154.5	0.555
T2 BSSS subscale need for support	11.2	10.304	135	0.257

T2 BSSS subscale support seeking	14.8	13.913	148.5	0.471
T2 BSSS subscale received support	55.357	54	131	0.345
T2 BSSS subscale provided support	49.083	50.2	83	0.731
T2 BSSS subscale protective buffering provider	15.833	15.529	94	0.722
T2 BSSS subscale protective buffering patient	12	14.217	105	0.042
postoperative moca totalscore	3.2	3.125	176	0.898
postoperative score for subtest of moca "visuospatial"	2.6	2.833	161.5	0.579
postoperative score for subtest of moca "executive function"	4.333	4.542	177.5	0.939
postoperative score for subtest of moca "language"	5.067	5.083	170	0.756
postoperative score for subtest of moca "attention"	2.267	2.667	154.5	0.449
postoperative score for subtest of moca "memory"	5.733	5.375	156.5	0.411

T1 SF8 Physical and Mental Health: The most striking results were observed in the T1 SF8 Physical and Mental Health scores. Patients with PHQ9 scores below 5 had mean scores of 6.133 and 6.000 in physical and mental health, respectively, which were substantially lower than those with scores above 4, who had mean scores of 12.208 and 10.250. These differences were statistically significant with Mann-Whitney U values of 18 and 29, and p-values of 0.0 in both cases. This suggests a considerable impact of depression severity on both physical and mental health perceptions preoperatively.

Preoperative MOCA Total Score: Another significant finding was in the preoperative MOCA total scores, where patients with lower PHQ9 scores (<5) had a mean of 3.533 compared to 2.739 for those with higher scores (>4). The Mann-Whitney U test yielded a value of 108 and a p-value of 0.036, indicating a significant difference in cognitive performance based on the severity of depressive symptoms.

T1 BSSS Subscale Protective Buffering Patient: The analysis also revealed a significant difference in the T1 BSSS Subscale Protective Buffering Patient scores, with means of 12.000 for the <5 group and 14.217 for the >4 group. The Mann-Whitney U statistic was 105, and the p-value was 0.042, suggesting differences in how patients perceive protective buffering based on their depressive symptoms.

The other variables, including various subscales of the BSSS, did not show statistically significant differences.

In the analysis of health-related variables against the preoperative HADS threshold for psychological distress for depression, the Mann-Whitney U test reveals several significant observations (table below).

	preoperative hads - threshold for psychological distress for depression		U	p
	No	Yes		
T1 SF8 physical health	9.500	11.571	77.000	0.199
T1 SF8 mental health	8.219	10.429	65.000	0.083
T1 BSSS subscale percieved support emotional and instrumental	30.452	28.571	70.500	0.125
T1 BSSS subscale need for support	10.903	10.143	97.500	0.676
T1 BSSS subscale support seeking	15.452	13.000	53.000	0.035
T1 BSSS subscale received support	54.129	55.000	105.000	0.895
T1 BSSS subscale provided support	49.304	50.000	55.000	0.880
T1 BSSS subscale protective buffering provider	15.208	17.800	40.500	0.258
T1 BSSS subscale protective buffering patient	13.000	14.857	72.000	0.166
preoperative moca totalscore	3.065	3.125	116.000	0.760
preoperative score for subtest of moca "visuospatial"	2.774	2.875	124.000	1.000
preoperative score for subtest of moca "executive function"	4.710	4.500	103.500	0.459
preoperative score for subtest of moca "language"	4.968	4.625	112.000	0.648
preoperative score for subtest of moca "attention"	2.355	2.250	116.000	0.777
preoperative score for subtest of moca "memory"	5.548	5.375	122.500	0.949
T2 SF8 physical health	8.839	12.000	51.500	0.011
T2 SF8 mental health	7.677	12.375	43.000	0.005
T2 BSSS subscale percieved support emotional and instrumental	30.355	30.375	120.500	0.894
T2 BSSS subscale need for support	10.290	12.125	69.000	0.053
T2 BSSS subscale support seeking	14.194	14.750	111.000	0.650
T2 BSSS subscale received support	54.300	54.500	114.000	0.829
T2 BSSS subscale provided support	49.333	51.000	45.500	0.305
T2 BSSS subscale protective buffering provider	15.208	17.800	40.500	0.258
T2 BSSS subscale protective buffering patient	13.000	14.857	72.000	0.166
postoperative moca totalscore	3.156	3.250	119.000	0.733
postoperative score for subtest of moca "visuospatial"	2.688	3.000	108.000	0.483
postoperative score for subtest of moca "executive function"	4.438	4.500	122.000	0.831
postoperative score for subtest of moca "language"	5.125	4.875	120.500	0.785
postoperative score for subtest of moca "attention"	2.469	2.875	112.000	0.579
postoperative score for subtest of moca "memory"	5.688	4.875	110.000	0.458

SF8 Physical and Mental Health Scores: The SF8 physical health scores showed a difference between groups with no distress (mean = 9.500) and those with distress (mean = 11.571), but this was not statistically significant (U = 77.000, p = 0.199). In contrast, the SF8 mental health scores showed

a trend towards significance, with means of 8.219 (no distress) and 10.429 (distress), and a U value of 65.000 (p = 0.083).

BSSS Subscale Scores: Notable results were observed in the T1 BSSS subscale for support seeking. The mean score for those without distress was higher (15.452) compared to those with distress (13.000), and this difference was statistically significant (U = 53.000, p = 0.035). Other BSSS subscales, such as perceived support, need for support, received support, provided support, protective buffering (provider and patient), did not show significant differences.

MOCA Cognitive Scores: In terms of cognitive performance, no significant differences were found in preoperative MOCA total scores and its subtests between those without and with distress. The closest to significance was the need for support, showing slightly higher scores in those with distress (12.125) compared to those without (10.290), but still not reaching conventional levels of significance (U = 69.000, p = 0.053).

Postoperative Analysis: Postoperatively, significant differences emerged in the SF8 physical (U = 51.500, p = 0.011) and mental health (U = 43.000, p = 0.005) scores, indicating that individuals with psychological distress had higher physical and mental health scores. However, similar to the preoperative scenario, the MOCA scores did not show significant differences postoperatively.

These findings indicate that psychological distress, as measured by HADS, might be associated with perceived health, particularly mental health, and less so with cognitive functioning as measured by MOCA.

The next tables show the differences for a second level of disaggregation, examining different levels of depression and distress by gender. The table below shows the results for men.

	male							
	preoperative phq9 - threshold for mild depression		U	p	preoperative hads - threshold for psychological distress for depression		U	p
	<5	>4			No	Yes		
	Mean	Mean			Mean	Mean		
T1 SF8 physical health	6.000	12.105	11.000	0.000	9.826	10.667	58.000	0.552
T1 SF8 mental health	5.800	9.895	14.500	0.000	8.087	10.000	43.500	0.166
T1 BSSS subscale percieved support emotional and instrumental	30.000	29.833	85.500	0.817	30.318	28.333	47.000	0.255
T1 BSSS subscale need for support	10.600	10.556	84.500	0.790	10.682	10.167	66.000	1.000
T1 BSSS subscale support seeking	15.200	14.444	77.000	0.529	15.227	12.833	34.000	0.071
T1 BSSS subscale received support	53.600	54.944	89.000	0.962	54.455	54.500	55.000	0.536
T1 BSSS subscale provided support	48.667	49.667	43.500	0.454	49.000	50.250	31.000	0.787
T1 BSSS subscale protective buffering provider	15.222	16.154	54.000	0.763	15.278	18.000	24.000	0.305
T1 BSSS subscale protective buffering patient	12.400	14.167	59.000	0.133	13.091	15.167	38.500	0.120
preoperative moca totalscore	3.900	2.947	46.500	0.012	3.261	3.429	70.000	0.559
preoperative score for subtest of moca "visuospatial"	3.200	2.947	81.500	0.511	3.087	2.857	68.000	0.516
preoperative score for subtest of moca "executive function"	5.100	4.474	75.000	0.340	4.739	4.429	64.500	0.415
preoperative score for subtest of moca "language"	5.000	4.947	86.500	0.654	4.957	4.857	77.000	0.846
preoperative score for subtest of moca "attention"	2.500	2.632	87.500	0.725	2.522	2.571	78.500	0.920
preoperative score for subtest of moca "memory"	6.000	5.368	65.000	0.052	5.696	5.286	69.500	0.440
T2 SF8 physical health	8.400	10.167	64.000	0.210	9.000	11.429	38.000	0.045
T2 SF8 mental health	7.700	9.833	63.500	0.201	8.091	12.143	33.000	0.024
T2 BSSS subscale percieved support emotional and instrumental	30.700	29.889	75.500	0.449	30.182	30.286	69.000	0.660
T2 BSSS subscale need for support	10.900	10.611	80.500	0.644	10.227	12.286	39.000	0.050
T2 BSSS subscale support seeking	14.700	13.944	79.000	0.596	14.136	14.714	70.500	0.739
T2 BSSS subscale received support	55.444	53.667	60.000	0.277	54.143	53.714	60.500	0.488

	male				male			
	preoperative phq9 - threshold for mild depression		U	p	preoperative hads - threshold for psychological distress for depression		U	p
	<5	>4			No	Yes		
	Mean	Mean			Mean	Mean		
T2 BSSS subscale provided support	48.778	50.643	54.000	0.569	49.529	51.000	38.500	0.379
T2 BSSS subscale protective buffering provider	15.222	16.154	54.000	0.763	15.278	18.000	24.000	0.305
T2 BSSS subscale protective buffering patient	12.400	14.167	59.000	0.133	13.091	15.167	38.500	0.120
postoperative moca totalscore	3.600	3.263	82.000	0.490	3.304	3.714	68.000	0.474
postoperative score for subtest of moca "visuospatial"	2.900	3.105	85.500	0.645	2.957	3.286	67.500	0.501
postoperative score for subtest of moca "executive function"	4.600	4.632	90.500	0.827	4.565	4.714	78.500	0.918
postoperative score for subtest of moca "language"	5.400	5.316	90.000	0.799	5.261	5.571	69.000	0.533
postoperative score for subtest of moca "attention"	2.000	2.789	70.500	0.248	2.348	3.286	59.000	0.279
postoperative score for subtest of moca "memory"	5.700	5.474	82.000	0.482	5.609	5.429	76.500	0.816

SF8 Physical and Mental Health Scores: A considerable difference was observed in T1 SF8 physical and mental health scores when comparing individuals with lower (<5) and higher (>4) PHQ9 scores. Although the difference in physical health ($U = 11.000$, $p = 0.000$) and mental health ($U = 14.500$, $p = 0.000$) scores was significant, this pattern was not mirrored in the comparison based on HADS scores for psychological distress.

BSSS Subscale Scores: The T1 BSSS subscale for support seeking showed a notable trend towards significance when comparing males with and without psychological distress (No: 15.452, Yes: 13.000; $U = 34.000$, $p = 0.071$). However, other subscales did not show significant differences in both the PHQ9 and HADS comparisons.

MOCA Cognitive Scores: Preoperative MOCA total scores showed a significant difference in the PHQ9 comparison ($U = 46.500$, $p = 0.012$), suggesting a potential impact of depression severity on cognitive performance. However, this significance was not observed in the HADS comparison.

Postoperative Analysis: Postoperatively, significant differences were observed in SF8 physical ($U = 38.000$, $p = 0.045$) and mental health ($U = 33.000$, $p = 0.024$) scores when comparing based on

HADS scores, indicating that psychological distress might be associated with perceived health status after surgery. However, MOCA scores postoperatively did not show significant differences in either comparison.

The table below shows results for female.

	preoperative phq9 - threshold for mild depression		U	p	preoperative hads - threshold for psychological distress for depression		U	p
	<5	>4			No	Yes		
	Mean	Mean			Mean	Mean		
T1 SF8 physical health	6.400	12.600	1.500	0.020	8.667	17.000	0.500	0.160
T1 SF8 mental health	6.400	11.600	3.000	0.046	8.556	13.000	2.000	0.381
T1 BSSS subscale percieved support emotional and instrumental	31.800	29.600	4.000	0.055	30.778	30.000	1.000	0.187
T1 BSSS subscale need for support	11.600	11.000	11.500	0.831	11.444	10.000	4.000	0.859
T1 BSSS subscale support seeking	15.800	15.800	12.500	1.000	16.000	14.000	2.500	0.482
T1 BSSS subscale received support	54.600	53.000	9.000	0.458	53.333	58.000	1.000	0.216
T1 BSSS subscale provided support	50.333	49.750	6.000	1.000	50.167	49.000	2.500	0.799
T1 BSSS subscale protective buffering provider	17.667	13.500	3.500	0.368	15.000	17.000	2.500	0.799
T1 BSSS subscale protective buffering patient	11.200	14.400	8.000	0.344	12.778	13.000	4.500	1.000
preoperative moca totalscore	2.800	1.750	5.500	0.241	2.500	1.000	1.500	0.303
preoperative score for subtest of moca "visuospatial"	2.000	2.000	9.500	0.896	1.875	3.000	1.500	0.301
preoperative score for subtest of moca "executive function"	5.200	4.000	4.000	0.128	4.625	5.000	4.000	1.000
preoperative score for subtest of moca "language"	5.400	4.000	5.500	0.241	5.000	3.000	1.000	0.216
preoperative score for subtest of moca "attention"	2.400	0.750	4.000	0.128	1.875	0.000	1.000	0.229
preoperative score for subtest of moca "memory"	5.200	5.250	9.000	0.784	5.125	6.000	1.000	0.194
T2 SF8 physical health	8.200	10.200	7.500	0.292	8.444	16.000	0.000	0.114
T2 SF8 mental health	6.800	8.000	11.000	0.750	6.667	14.000	0.000	0.112
T2 BSSS subscale percieved support emotional and instrumental	30.400	31.200	11.500	0.814	30.778	31.000	3.000	0.556
T2 BSSS subscale need for support	11.800	9.200	6.500	0.206	10.444	11.000	3.000	0.598
T2 BSSS subscale support seeking	15.000	13.800	10.000	0.596	14.333	15.000	3.000	0.596

T2 BSSS subscale received support	55.200	55.200	12.000	0.916	54.667	60.000	1.000	0.216
T2 BSSS subscale provided support	50.000	44.000	0.000	0.180	48.500	-	-	-
T2 BSSS subscale protective buffering provider	17.667	13.500	3.500	0.368	15.000	17.000	2.500	0.799
T2 BSSS subscale protective buffering patient	11.200	14.400	8.000	0.344	12.778	13.000	4.500	1.000
postoperative moca totalscore	2.400	2.600	10.000	0.588	2.778	0.000	0.500	0.148
postoperative score for subtest of moca "visuospatial"	2.000	1.800	12.500	1.000	2.000	1.000	2.000	0.350
postoperative score for subtest of moca "executive function"	3.800	4.200	11.500	0.828	4.111	3.000	2.500	0.468
postoperative score for subtest of moca "language"	4.400	4.200	11.000	0.747	4.778	0.000	0.000	0.107
postoperative score for subtest of moca "attention"	2.800	2.200	10.500	0.667	2.778	0.000	1.000	0.210
postoperative score for subtest of moca "memory"	5.800	5.000	12.000	0.881	5.889	1.000	0.000	0.025

The only significant finding when comparing levels of distress on females was observed for the "Memory" subscale, where scores had significantly dropped from 5.889 to 1.000.

When comparing depression levels, significant differences were found for scores of physical and mental health preoperatively. Significantly higher scores were observed for those with scores lower than 4 on depression.

In order to deepen the findings, the relative change on each variable was calculated by subtracting the preoperative score from the postoperative score for all scales. This change was subject to the same statistical comparisons. The table below shows the differences across genders, depression and distress.

No significant differences were observed for different genders ($p < 0.05$), indicating that there is no influence of gender on the change from pre to post operation in any measurement.

Preoperative PHQ9 - Threshold for Mild Depression:

The change in SF8 Physical Health was significant among males when comparing those with PHQ9 scores below 5 to those above 4. There was an increase in physical health scores in the lower depression group (mean = 2.200) compared to a decrease in the higher depression group (mean = -1.652), with a U value of 70.500 and a p-value of 0.002.

Another significant change was observed in the MoCA Language scores, with a decrease in those with lower depression scores (mean = -0.800) compared to a slight increase in those with higher scores (mean = 0.217). The U value was 96.000, and the p-value was 0.018.

Preoperative HADS - Threshold for Psychological Distress for Depression:

In terms of the change in BS Perceived Support, males showed a difference based on the presence of psychological distress. The mean change for those without distress was 0.000, and for those with distress, it was 1.714. This difference was significant, with a U value of 52.000 and a p-value of 0.033.

The change in BS Seeking scores also revealed a significant difference, with a larger decrease in those without distress (mean = -1.033) compared to those with distress (mean = 1.571), yielding a U value of 48.500 and a p-value of 0.027.

	sex		U	p	preoperative phq9 - threshold for mild depression		U	p	preoperative hads - threshold for psychological distress for depression		U	p
	male	female			<5	>4			No	Yes		
	Mean	Mean			Mean	Mean			Mean	Mean		
Change in SF8 Physical Health	-0.071	-0.300	131.500	0.777	2.200	-1.652	70.500	0.002	-0.290	0.571	97.000	0.664
Change in SF8 Mental Health	0.714	-1.600	97.500	0.157	1.400	-0.739	118.500	0.105	-0.419	2.429	60.500	0.069
Change in BS Perceived Support	0.407	0.100	131.500	0.901	0.000	0.545	151.500	0.665	0.000	1.714	52.000	0.033
Change in BS Need	0.222	-0.800	115.500	0.502	0.267	-0.273	137.000	0.383	-0.567	2.143	58.000	0.066
Change in BS Seeking	-0.222	-1.400	119.000	0.582	-0.600	-0.500	150.500	0.652	-1.033	1.571	48.500	0.027
Change in BS Received Support	-0.654	1.400	90.000	0.156	0.429	-0.409	143.500	0.732	-0.207	0.429	93.500	0.748
Change in BS Provided Support	1.389	0.000	12.000	0.446	0.778	1.636	46.000	0.789	1.438	0.500	24.500	0.475
Change in BS Buffering Provider	0.000	0.000	80.500	1.000	0.000	0.000	102.000	1.000	0.000	0.000	60.000	1.000
Change in BS Buffering Patient	0.000	0.000	140.000	1.000	0.000	0.000	172.500	1.000	0.000	0.000	108.500	1.000
Change in MoCA Visuospatial	0.063	0.000	122.500	0.454	-0.333	0.348	109.500	0.038	0.065	0.125	118.000	0.817
Change in MoCA Executive Function	0.063	-0.111	135.500	0.776	-0.200	0.087	148.500	0.447	-0.065	0.125	105.500	0.493
Change in MoCA Language	0.000	-0.556	114.000	0.327	-0.800	0.217	96.000	0.018	-0.226	0.000	113.500	0.705
Change in MoCA Attention	0.438	-0.444	103.500	0.174	-0.067	0.348	142.000	0.323	0.194	0.250	115.000	0.736
Change in MoCA Memory	0.188	0.556	128.500	0.622	-0.200	0.261	147.500	0.450	0.032	0.625	104.500	0.493
Change in MoCA Orientation	0.031	0.111	92.500	0.079	0.000	0.000	169.500	0.923	0.129	-0.500	97.500	0.317

Similar to the previous analysis, each gender was also examined separately with respect to depression and distress. The following table shows results for men.

	male				male			
	preoperative phq9 - threshold for mild depression		U	p	preoperative hads - threshold for psychological distress for depression		U	p
	<5	>4			0	1		
	Mean	Mean			Mean	Mean		
Change in SF8 Physical Health	2.400	-1.444	39.500	0.015	-0.318	0.833	58.000	0.653
Change in SF8 Mental Health	1.900	0.056	64.000	0.210	0.182	2.667	37.500	0.109
Change in BS Perceived Support	0.700	0.235	70.000	0.435	0.000	1.833	31.000	0.053
Change in BS Need	0.300	0.176	79.000	0.761	-0.381	2.333	34.000	0.088
Change in BS Seeking	-0.500	-0.059	75.500	0.631	-0.762	1.667	28.500	0.043
Change in BS Received Support	0.333	-1.176	66.500	0.588	-0.900	0.167	53.000	0.669
Change in BS Provided Support	0.750	1.900	35.000	0.654	1.643	0.500	21.000	0.454
Change in BS Buffering Provider	0.000	0.000	58.500	1.000	0.000	0.000	36.000	1.000
Change in BS Buffering Patient	0.000	0.000	90.000	1.000	0.000	0.000	66.000	1.000
Change in MoCA Visuospatial	-0.300	0.316	58.500	0.055	0.043	0.286	80.000	0.977
Change in MoCA Executive Function	-0.300	0.158	75.500	0.329	-0.130	0.429	51.500	0.118
Change in MoCA Language	-0.500	0.158	59.000	0.085	-0.174	0.286	63.000	0.369
Change in MoCA Attention	0.400	0.368	88.500	0.738	0.304	0.714	65.000	0.399
Change in MoCA Memory	-0.500	0.158	73.500	0.317	-0.174	0.714	60.000	0.309
Change in MoCA Orientation	-0.300	0.105	82.500	0.522	-0.087	0.143	77.500	0.869

Preoperative PHQ9 - Threshold for Mild Depression:

A significant change was observed in the SF8 Physical Health scores, with males having PHQ9 scores below 5 showing an increase (mean = 2.400) and those with scores above 4 showing a decrease (mean = -1.444). This difference was statistically significant (U = 39.500, p = 0.015), indicating that the severity of depressive symptoms can significantly impact perceptions of physical health.

Preoperative HADS - Threshold for Psychological Distress for Depression:

The change in BS Perceived Support was significant, with males without distress showing no change (mean = 0.000) and those with distress showing an increase (mean = 1.833). The U value was 31.000 with a p-value of 0.053, suggesting that psychological distress can influence the perception of received social support.

Another significant finding was in the change in BS Seeking scores. Males without distress showed a larger decrease (mean = -0.762) compared to those with distress (mean = 1.667). The U value was 28.500 with a p-value of 0.043, indicating that distress levels can affect social support-seeking behavior.

The table below shows results for female.

	female							
	preoperative phq9 - threshold for mild depression		U	p	preoperative hads - threshold for psychological distress for depression		U	p
	<5	>4			0	1		
	Mean	Mean			Mean	Mean		
Change in SF8 Physical Health	1.800	-2.400	4.000	0.072	-0.222	-1.000	4.000	0.860
Change in SF8 Mental Health	0.400	-3.600	5.500	0.142	-1.889	1.000	3.000	0.600
Change in BS Perceived Support	-1.400	1.600	1.500	0.016	0.000	1.000	2.000	0.363
Change in BS Need	0.200	-1.800	6.500	0.207	-1.000	1.000	2.500	0.484
Change in BS Seeking	-0.800	-2.000	12.000	0.916	-1.667	1.000	2.000	0.378
Change in BS Received Support	0.600	2.200	11.000	0.748	1.333	2.000	4.000	0.858
Change in BS Provided Support	1.000	-1.000	0.000	0.317	0.000	-	-	-
Change in BS Buffering Provider	0.000	0.000	6.000	1.000	0.000	0.000	3.000	1.000
Change in BS Buffering Patient	0.000	0.000	12.500	1.000	0.000	0.000	4.500	1.000
Change in MoCA Visuospatial	-0.400	0.500	6.000	0.310	0.125	-1.000	2.000	0.423
Change in MoCA Executive Function	0.000	-0.250	9.000	0.794	0.125	-2.000	0.000	0.099
Change in MoCA Language	-1.400	0.500	4.500	0.169	-0.375	-2.000	1.500	0.323
Change in MoCA Attention	-1.000	0.250	7.500	0.532	-0.125	-3.000	0.500	0.166
Change in MoCA Memory	0.400	0.750	10.000	1.000	0.625	0.000	3.000	0.695
Change in MoCA Orientation	0.600	-0.500	9.500	0.896	0.750	-5.000	0.000	0.099

Regression Models

Significant findings were explored though regression models, which tested the influence of several variables on the postoperative MOCA scores, while controlling for baseline scores of the same MOCA dimensions. The only model that had a significant predictor was for the "language" subdimension, $F(37) = 2.953$, $p = 0.012$. The coefficients are presented below.

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.995	0.849		3.529	0.002
Sex (Male)	0.630	0.442	0.221	1.426	0.165
tumor volume (cm3) if needed	0.003	0.006	0.081	0.518	0.609
edema volume (cm3) if needed	-0.001	0.003	-0.082	-0.470	0.642
Location: Limbisches System Tumor	0.574	0.822	0.101	0.698	0.491
Location: Temporal Tumor	-0.186	0.351	-0.076	-0.531	0.600
Location: Other	-0.516	0.464	-0.167	-1.112	0.276
Location: Right Emisphere	1.005	0.399	0.415	2.517	0.018
chemotherapy	0.915	0.483	0.330	1.892	0.069
preoperative phq9 - totalscore of the questionnaire	-0.047	0.040	-0.180	-1.161	0.256
preoperative score for subtest of moca "language"	0.148	0.118	0.191	1.256	0.220

a. Dependent Variable: postoperative score for subtest of moca "language"

Tumoe locted on the right emisphere had a positive effect on postoperative scores of 'language", $B = 1.005$, $p < 0.05$. In other words, individuals with the tumor on the right emisphere are expected to show significantly higher 'language' scores compared to those with tumor on the left emisphere.