7. HDL

Table No. 59 Statistical analysis of HDL

<table>
<thead>
<tr>
<th>HDL</th>
<th>Mean</th>
<th>t-Value</th>
<th>P-Value</th>
<th>% Effect</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A</td>
<td>50.5</td>
<td>52.9</td>
<td>-3.212</td>
<td>0.003</td>
<td>4.7</td>
</tr>
<tr>
<td>Group B</td>
<td>45.5</td>
<td>47.7</td>
<td>-6.468</td>
<td>0.000</td>
<td>4.9</td>
</tr>
<tr>
<td>Group C</td>
<td>36.3</td>
<td>36.4</td>
<td>-1.063</td>
<td>0.297</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Since the observations are quantitative, we have used paired t-test to test the efficacy in Group A, Group B and Group C. From above table we can observe that P-Values for Group A and Group B was less than 0.05. While P-Value for Group C was greater than 0.05. Hence we conclude that effect observed was significant in Group A and Group B. While Effect observed in Group C was not significant. Effect observed in Group A was 4.7%, in Group B was 4.9% and in Group C was 0.4%.

Graph No. 48 Statistical analysis of HDL

Test for increased HDL:

There are three variables related increased HDL, as
X: HDL increased by treatment A,
Y: HDL increased by treatment B and
Z: HDL increased by treatment C.

Hypothesis 1: Test normality of three variables:
For testing normality we use Shapiro-Wilk normality test.

For X: Test statistic $W = 0.9234$, $p$-value $= 0.03279 < 0.05$. Therefore normality does not hold.

For Y: Test statistic $W = 0.9462$, $p$-value $= 0.1336 > 0.05$. Therefore normality hold.

For Z: Test statistic $W = 0.853$, $p$-value $= 0.0007168 < 0.05$. Therefore normality does not hold.

Result shows variables A and C are not normal.

**Hypothesis 2:** To test whether average HDL increased by using treatment A, average HDL increased by using treatment B and average HDL increased by using treatment Care same or not.

Since normality does not holds for all three variables X, Y and Z. To test this hypothesis we use non-parametric test.

Therefore for testing this hypothesis we use Kruskal Wallis one way ANOVA test, under this test instead of average we use median. The result of this test is as below:

Kruskal-Wallis chi-squared $= 21.134$, df $= 2$, p-value $= 2.575e-05$

Conclusion: since p-value $= 2.575e-05 < 0.05$, median increased HDL by treatment A, B and C are different.

**Hypothesis 3:** To test

$H_0$: Median increased HDL by treatment A and B are equal

against

$H_1$: Median increased HDL by treatment A $>$ median increased HDL by treatment B.

[we use median since normality does not hold]

For testing this hypothesis we use median test. The result of this test is as below:

Chi Sq statistic $= 13.0844$

p-value $= 5.9E-05$

Conclusion: since p-value $= 5.9E-05 < 0.05$,

median increased HDL by treatment A $>$ treatment B.

**Hypothesis 4:** To test

$H_0$: Median increased HDL by treatment A and C are equal against

$H_1$: Median increased HDL by treatment A $>$ median increased HDL by treatment C.
[we use median since normality does not hold]

For testing this hypothesis we use median test. The result of this test is as below:

Chi Sq statistic =13.0667

p-value = 0.0003

Conclusion: since p-value = 0.0003 < 0.05,

median increased HDL by treatment A > treatment C. Among treatment A, treatment B and treatment C, median increased HDL by treatment A > than that of treatment B and treatment C.

**Graph No. 49  Mean increase in HDL**