CHAPTER 3

CORONARY HEART DISEASE AND SMOKING AS CORRELATES OF PHYSICAL DISTRESS

Outline

1. Introduction.
2. Layout of Experiment.
3.1. Detail of Significant Results.
4. Summary.
INTRODUCTION

The various studies have reported that some individuals have a disease-prone personality. They suffer from illnesses quickly and more times than the others.

Studies on both humans and animals suggest that potentially pathogenic physiological states can be evoked by certain types of behavioural stimuli.

It is well known that there are wide individual differences in autonomic nervous system responses to emotional stress (Engel & Buckford 1961). These individual differences are moderated by biological factors (e.g. genetic susceptibility, presence or absence of disease) as well as psychological attributes (e.g., felt ability to cope).

Krantz et. al. (1984) have reported that cardiovascular and endocrinal changes lead to the coronary heart disease and essential hypertension.

Rogotti Nancy A et. al. (1983) have found that the physically achieve individuals have a lower incidence of myocardial infarction and mortality from coronary disease. They have also proved that exercise increases functional capacity, lessens angina pectoris and improves self image in the patients of coronary heart disease.
Research suggests that behavioural characteristics such as type A (coronary prone) behaviour, aggressiveness, or a high potential for hostility may be important factors leading to CHD (Manuch et al. 1984).

II. THE LAYOUT OF EXPERIMENT

This chapter is based on the study of physical distress in relation to the coronary heart disease and smoking behaviour, there is a single experiment having three null hypotheses. The purpose of ANOVA, which has been used for analysis, is to show the main effects and interaction between the independent variables in terms of CHD and normals, as well as smokers and non-smokers. Since f-test lacks in inter-group matching, the t-test has been applied to the requirement. Details of design and other methodological considerations have already been presented in chapter 2 of the present report.

Experiment No. I.

1. **Problem**  
   Physical distress = f(CHD x Smoking).

2. **Related Null Hypotheses**

   \[ H_{01} \] CHD does not affect physical distress scores.

   \[ H_{02} \] Smoking does not affect physical distress scores.

   \[ H_{03} \] CHD and smoking do not interact.
3. Results: ANOVA Summary (.05)

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>df</th>
<th>SS</th>
<th>$\bar{F}_{sq.}$</th>
<th>$f$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between CHD</td>
<td>1</td>
<td>8390.56</td>
<td>6390.56</td>
<td>45.695662</td>
</tr>
<tr>
<td>Between Smoking</td>
<td>1</td>
<td>829.44</td>
<td>629.44</td>
<td>4.5172164</td>
</tr>
<tr>
<td>CHD x Smoking</td>
<td>1</td>
<td>466.56</td>
<td>466.56</td>
<td>2.5409392</td>
</tr>
<tr>
<td>Within groups</td>
<td>96</td>
<td>17627.28</td>
<td>183.6175</td>
<td></td>
</tr>
</tbody>
</table>

** Significant at .01 level of significance.
* Significant at .05 level of significance.

IIII. DETAIL OF SIGNIFICANT RESULTS.

1b. CHD rejected at .01 level of significance.
Two levels of CHD are further tested and the t-test results are as follows:

(a) CHD smokers
   CHD smokers > .01
   Normal smokers.

(b) CHD non-smokers
   CHD non-smokers > .01
   Normal non-smokers.

Coronary heart disease promotes physical distress among smokers as well as non-smokers.

H0. Smoking rejected at .05 level of significance.
Two levels of smoking are further tested and the t-test results are as follows:

(a) CHD smokers
   CHD smokers > .05
   CHD non-smokers.

(b) Normal smokers
   Not significant at .05
   Normal non-smokers.
Diagram 3.1

Showing physical distress level of various groups

I. CHD smokers
II. Normal smokers
III. CHD non-smokers
IV. Normal non-smokers
smoking promotes physical distress amongst the patients, whereas it does not do so in the case of normal people.

$H_0^3$ CHD x smoking = retained at .05 level of significance. The subgroups of the '2 x 2' interaction are further tested and the t-test results are:

(a) CHD smokers

<table>
<thead>
<tr>
<th>CHD smokers $&gt; .01$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal non-smokers</td>
</tr>
</tbody>
</table>

Both, CHD and smoking, promote physical distress.

(b) CHD non-smokers

<table>
<thead>
<tr>
<th>CHD non-smokers $&gt; .01$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal smokers</td>
</tr>
</tbody>
</table>

CHD, independent of smoking, promotes physical distress.

The diagramatic representation of the results is presented in the diagram 3.1. It can be clearly seen that physical distress is maximum in CHD smokers and minimum in normal non-smokers amongst the four groups.
TV SUMMARY

1. CHD promotes physical distress in smokers as well as non-smokers.
2. Smoking promotes physical distress in CHD patients.
3. CHD, independent of smoking, promotes physical distress.
4. Maximum physical distress level is evident in CHD smokers and minimum in normal non-smokers.