CHAPTER III

3.1. Statement of the problem

Physiological conceptualizations of stress are limited because they only focus on the impact of stressors at a biological level and cannot fully explain individual differences in responses to stressors. The main problem with defining stress simply as a stimulus is that it assumes that all individuals will respond in the same way to a given stressor. Clearly there are other factors that contribute to an individual’s response to a stressful event. The characterization and assessment of stress has undergone considerable refinement over the past twenty years, and attention is now being paid to better understand the stress response and to the dynamic relationships between stressors and the individual and also stress-illness relationship. However, some outstanding issues remain. How do stressors integrate? Do coping resources and/or style play a role in the experience of stressors experienced? We also know that behaviour in response to stress is multiply determined by relatively stable personality factors and cognitive processes. In this study an attempt has been made to understand and throw light on the above issues.

3.2. Objectives

The first objective is to examine the difference in life events, perceived stress, coping resources (personality factors), and coping strategies among patients and non-patients.

Second objective of the present study is to examine the relationship between different coping resources and life events, vulnerability to stress, perceived stress and coping strategies.
The third objective is to study the role of life events, coping resources (personality factors), coping strategies, and vulnerability in perceived stress.

The fourth objective is to study the role of life events, coping resources (personality factors), coping strategies, and vulnerability in the degree of experience of depression.

To achieve the above objectives the present investigation compared depressed and coronary heart patients (CHD) with a group of healthy subjects.

3.3. METHODOLOGY

3.3.1. Design

The study was conducted post-facto following quasi-experimental design (Broota, 1989). According to Broota, “all such experimental situations in which experimenter does not have full control over the assignment of experimental units randomly to the treatment conditions or the treatment cannot be manipulated are collectively called quasi-experimental designs” (p. 9).

3.3.2. Hypotheses:

- There will be significant difference between depressives, persons suffering from coronary heart disease (CHD) and healthy persons in, stressful life events, vulnerability to stress, perceived stress and coping resources, coping strategies.
- There will be significant relationship between stressful life events, vulnerability to stress, perceived stress coping resources and coping strategies.
- Role of coping resources (five-factors of personality), coping strategies, stressful life events and vulnerability to stress will differ significantly in predicting perceived stress among depressives, coronary heart disease patients and healthy group.
Role of coping resources (five-factors of personality), coping strategies, stressful life events and vulnerability to stress will differ significantly in predicting depression score among depressives, coronary heart disease patients and healthy group.

3.3.3. Sample

Participants: The samples of this study include 100 clinically depressed patients, 100 CHD patients and 100 healthy persons. The clinical sample of depression was selected from Psychiatry Out-patient Department of J S S Hospital and K R Hospital.

Table 3.1. Descriptive information of the samples

<table>
<thead>
<tr>
<th>Variables</th>
<th>Depression group N=100</th>
<th>CHD group N=100</th>
<th>Normal group N=100</th>
<th>Significance test used</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Age</td>
<td>35.9</td>
<td>46.42</td>
<td>37.97</td>
<td>F = 21.91</td>
<td>.000</td>
</tr>
<tr>
<td>S.D</td>
<td>10.59</td>
<td>12.52</td>
<td>12.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>50</td>
<td>69</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>31</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 –not married</td>
<td>33</td>
<td>13</td>
<td>37</td>
<td>X²</td>
<td>.004</td>
</tr>
<tr>
<td>2 –married</td>
<td>61</td>
<td>86</td>
<td>59</td>
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<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>4- widowed</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-others (specify)</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high school and below</td>
<td>53</td>
<td>50</td>
<td>24</td>
<td>27.01</td>
<td>.000</td>
</tr>
<tr>
<td>P U C</td>
<td>25</td>
<td>17</td>
<td>20</td>
<td></td>
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<tr>
<td>Bachelor degree</td>
<td>19</td>
<td>26</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(BA, BSc)</td>
<td>3</td>
<td>7</td>
<td>14</td>
<td></td>
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<tr>
<td>Post graduate</td>
<td>92</td>
<td>88</td>
<td>83</td>
<td>3.81</td>
<td>.148</td>
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<tr>
<td>Religion</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hindus</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>Christian</td>
<td></td>
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</tr>
</tbody>
</table>

Mysore. The sample of CHD patients was selected from Bhaskar’s Heart Care Centre and Vikram Hospital, Mysore. Their age ranged from 20 to 65 years - depressive
patients (M=35.90 yrs SD=10.59 yrs); CHD patients (M=46.42 yrs SD=12.52 yrs); and healthy subjects (M=37.97 yrs; SD=12.49 yrs). The healthy subjects were drawn from general population, after screening for possible physical or psychiatric morbidity. The three groups were compared on the remaining variables (gender, disease activity, use of steroids and stressful life events) using ANVA and $x^2$ (see tables 3.1 and 3.2).

Table 3.2. Scheffe’s test for the means age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>S.D</th>
<th>Subset for Alpha. 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Depressive group</td>
<td>100</td>
<td>35.90</td>
<td>10.59</td>
<td>0.470</td>
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<tr>
<td></td>
<td>Healthy group</td>
<td>100</td>
<td>37.97</td>
<td>12.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHD group</td>
<td>100</td>
<td>46.42</td>
<td>12.52</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3.3.1. Inclusion criteria

1. Those who were diagnosed as suffering from depressive disorder based on ICD-10, by psychiatrist.

2. Only those patients who had at least suffered from one cardiac disease for example, infarction or had recurrent infarction before being admitted to the hospital.

3. There are many tests that may help to diagnose CHD. Usually, more than one test will be done before a definitive diagnosis can be made. Some of the tests include: Electrocardiogram (ECG), Exercise Stress Test, Echocardiogram, Nuclear Scan, Coronary angiography/arteriography and Electron-beam computed tomography (EBCT).

4. A group of healthy persons were drawn from the normal volunteers from the city. The General Health Questionnaire was administered to determine the
presence of any physical and mental problems. The cutoff of G.H.Q (28) (Goldberg, 1979) score for screening healthy from unhealthy people is below 23. Only those individuals who had scores below 23 were included.

3.3.3.2. Exclusion criteria

For coronary heart patients those patients with history of smoking, family history of heart disease, history of any others physical or mental illness were excluded. For depression should never have been a manic episode, a mixed episode, or a hoppomanic episode or due to the direct physiological effects of a general medical. However, patients with history of smoking, use alcohol, family history of depression, history of heart disease, history of any others physical or mental illness were excluded condition.

3.4. Tools:

To screen the volunteers from general population for their general health status and to select healthy group, General Health Questionnaire 28 (Goldberg, 1979) was used. The following scales were used to measure different study variables in all the three groups of subjects:

3.4.1. Personal Data Sheet

The personal data sheet was prepared by the investigator to provide information regarding name (optional), age, gender, marital status, level of education, religion and occupation. The next section of data sheet was designed to collect the information about history of mental disease, history of hypertension, history of heart disease, history of smoking and drinking, for control of some basic risk factors among groups (Appendix I).
3.4.2. General Health Questionnaire (Goldberg and Hillier, 1979)

The multiple versions of the GHQ include a series of 12, 20, 30 or 60 items designed to measure somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. Additionally, the GHQ-28 contains four scales providing scores related to somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. The healthy people were drawn from the general population who volunteered to participate in the study. To assess the physical and mental health of participants in the healthy group General Health Questionnaire (GHQ-28) (Goldberg and Hillier, 1979) was used.

Scoring

Using the cut-off scores provided by Swallow, Lindow, Masson, and Hay (2003) only those individuals who had a score of 23 or 24 and below were admitted into healthy group. This scale gives a total score with 4 sub-scales: social dysfunction, dogmatization, anxiety and insomnia, and depression. Each item has four answering categories. Likert score (item score 0–1–2–3) were calculated. (Goldberg, Hillier, 1979)

3.4.3. Coping Orientations to Problems Experienced (COPE) Scale

Carver et al., 1989):

The COPE was used for assessing general coping strategies that are not directly associated with leisure. The full COPE is a 60-item measure that yields 15 factors that reflect active versus avoidant coping strategies. In the "trait like" version, respondents are asked to rate the degree to which they typically use each coping
strategy when under stress. In the "state like" version, respondents rate the degree to which they use each coping strategy to deal with a particular stressful event.

The COPE scales are: Active Coping (taking action or exerting efforts to remove or circumvent the stressor), Planning (thinking about how to confront the stressor, planning one’s active coping efforts), Seeking Instrumental Social Support (seeking assistance, information, or advice about what to do), Seeking Emotional Social Support (getting sympathy or emotional support from someone), Suppression of Competing Activities (suppressing one’s attention to other activities in which one might engage in order to concentrate more completely on dealing with the stressor), Religion (increased engagement in religious activities), Positive Reinterpretation and Growth (making the best of the situation by growing from it or viewing it in a more favorable light), Restraint Coping (coping passively by holding back one’s coping attempts until they can be of use), Resignation/Acceptance (accepting the fact that the stressful event has occurred and is real), Focus on and Venting of Emotions (an increased awareness of one’s emotional distress, and a concomitant tendency to ventilate or discharge those feelings), Denial (an attempt to reject the reality of the stressful event), Mental Disengagement (psychological disengagement from the goal with which the stressor is interfering, through daydreaming, sleep, or self-distraction), Behavioral Disengagement (giving up, or withdrawing effort from, the attempt to attain the goal with which the stressor is interfering), Alcohol/Drug Use (turning to the use of alcohol and other drugs as a way of disengaging from the stressor), and Humor (making jokes about the stressor).
Scoring

Carver, Scheier, and Weintraub (1989) developed the measure with the belief that coping is a stable disposition rather than situational. Participants are instructed to report what they usually do under stress. Respondents choose their answers based on a four-point scale that is anchored at not at all (1) to a lot (4). The COPE scale consists of three main groupings with five scales per group and four items per scale: (a) problem-focused coping: active coping, planning, restraint coping, seeking social support for instrumental reasons, and suppression of competing activities; (b) emotion-focused coping: positive reinterpretation and growth, religion, humor, acceptance, and seeking social support for emotional reasons; and (c) dysfunctional coping: focus on and venting of emotions, denial, behavioral disengagement, mental disengagement, and alcohol/drug use. The measure has good psychometric properties with alphas ranging from .45 to .92, test-retest reliabilities ranging from .46 to .86, and strong evidence of discriminate and convergent validity, with constructs such as hardiness, optimism, control, and self-esteem. Carver et al. reported alpha reliabilities all above .6 except for the mental disengagement scale (.45). With a few exceptions, the internal validity of the individual COPE scales does not show excessive intercorrelation.

In this study the test – retest reliability was examined (N=50) in general population. The Cronbach $\alpha$ ranged from .85 to .97 for all 15 sub - scales of coping strategies. The Pearson’s Correlation ranged from .75 to .95 (table 3.3).
Table 3.3. Means, Sd and reliabilities results for coping strategies

<table>
<thead>
<tr>
<th>Variables</th>
<th>Means and SD</th>
<th>Cronbach α</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Depressive</td>
<td>CHD</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>Sd</td>
<td>M</td>
</tr>
<tr>
<td>Active Coping</td>
<td>10.49</td>
<td>2.44</td>
<td>9.80</td>
</tr>
<tr>
<td>Planning</td>
<td>9.45</td>
<td>2.02</td>
<td>10.35</td>
</tr>
<tr>
<td>Restraint coping</td>
<td>10.02</td>
<td>2.36</td>
<td>9.74</td>
</tr>
<tr>
<td>Seeking Instrumental Social Support</td>
<td>9.73</td>
<td>2.08</td>
<td>10.59</td>
</tr>
<tr>
<td>Suppression of Competing Activities</td>
<td>9.91</td>
<td>2.41</td>
<td>9.86</td>
</tr>
<tr>
<td>Positive Reinterpretation And growth</td>
<td>8.98</td>
<td>2.32</td>
<td>9.77</td>
</tr>
<tr>
<td>Religious Coping</td>
<td>10.61</td>
<td>2.11</td>
<td>9.71</td>
</tr>
<tr>
<td>Humor</td>
<td>10.08</td>
<td>2.62</td>
<td>10.31</td>
</tr>
<tr>
<td>Use of Emotional Social Support</td>
<td>10.18</td>
<td>2.79</td>
<td>10.83</td>
</tr>
<tr>
<td>Acceptance</td>
<td>9.94</td>
<td>2.58</td>
<td>10.63</td>
</tr>
<tr>
<td>Focused and venting emotions</td>
<td>10.50</td>
<td>2.27</td>
<td>12.04</td>
</tr>
<tr>
<td>Mental disengagement</td>
<td>10.77</td>
<td>2.77</td>
<td>11.49</td>
</tr>
<tr>
<td>Denial</td>
<td>8.32</td>
<td>2.54</td>
<td>9.67</td>
</tr>
<tr>
<td>Behavioral disengagement</td>
<td>9.81</td>
<td>2.14</td>
<td>10.96</td>
</tr>
<tr>
<td>Substance Use</td>
<td>8.69</td>
<td>1.98</td>
<td>8.65</td>
</tr>
</tbody>
</table>

3.4.4. NEO Five-Factor Inventory (NEO-FFI) (Costa & McCrae, 1989)

The NEO-FFI was developed by Costa and McCrae in 1992. Costa and McCrae developed the NEO-FFI, in response to the length of the NEO PI-R, and based it on a factor analysis of the 1985 version of their NEO PI. The NEO-FFI is a
shortened version of the NEO PI-R (Srivastava& John, 1999). The NEO-FFI provides a quick, reliable and accurate measure of the five domains of adult personality viz., N (neuroticism), E (extraversion), O (openness), A (agreeableness) and C (conscientiousness) (Psychological Assessment Resources, 2002). Each trait is assessed with 12 items, adding to 60 items. The NEO-FFI can be administered in ten to fifteen minutes. Sixty items are rated on a five-point scale. The response format ranged from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate stronger personality characteristics in each of the domains.

The Neo-FFI possesses satisfactory psychometric properties and corresponds well with the full 181-item instrument (Costa & McCrae, 1985, 1989). The NEO-FFI scales show correlations of .75 and .89 with the NEO-PI. The NEO-PI has an internal consistency coefficient range from .86 to .95 for the domain scale (Costa & McCrae, 1991). The trait scales have good internal reliability, with the following Cronbach α: N = .85, E= .75, O = .74, A = .71 and C = .79. The results of McCrae et al showed that the NEO-PI-R is a culture free personality assessment.

The reliability coefficients calculated in this study are as follows - Cronbach α – N = .88, E = .93, O = .95, A = .85 and C = .83.

3.4.5. Zung Self-Rating Depression Scale (SDS) (Zung, 1965)

The Self-Rating Depression Scale consists of 20 items that patients score as “a little of the time.” “part of the time,” and “most of the time.” The items include such statements as “I feel downhearted and blue,” “I have trouble with constipation,” “I get tired for no reason,” “My life is pretty full.” Zung has reported the use of this scale in a fairly large number of patients and claims that it is relatively insensitive to such factors as age, education, and social status. He also reports a significant correlation with MMPI D scale scores. Although there is a statistically significant difference in
SDS scores for patients with a diagnosis of anxiety reaction, as compared with depressed patients, examination of the published data suggests that there may be considerable overlap. For example, the mean SDS score for outpatients with a diagnosis of depressive reaction was 64, whereas that for outpatients with a diagnosis of anxiety reaction was 54. Although this difference was statistically significant, there was a considerable overlap. Thus, although the scale may be useful in plotting the course of an illness, its usefulness for differentiating depression from anxiety is questionable (Zung, 1965 & McDowell, 1996).

**Scoring**

Each item is scored on a scale of 1-4 (a little of the time - most of the time) with reverse scaling for the negatively worded items. This yields an overall score of 20-80 and a converted SDS Index score of 0.25 to 1.00. Minimum score is 20. It is expected that most people with depression score above 50 (SDS index 0.62). SDS index = (self-rated raw score) / 80, index for normal control population: 0.25-0.43 for people admitted with depression but discharged with other diagnoses: 0.38-0.71, and index for people admitted and discharged with the diagnosis of depression: 0.63-0.90 (McDowell, 1996).

The highest published cut-point for the ZDS was 60/61 (Raft, Spencer, Toomey, Brogan, 1977) and with an unusually low sensitivity for detecting major depression. Other studies generally accept the level 49/50 and report 97% sensitivity and 63% specificity. A subject with ZDRS score below 50 is considered normal, with a score of 50–59 (SDS 0.62–0.74) is considered to suffer from mild depression, with score 60–69 (SDS 0.75–0.86) depression is considered moderate to marked, while with a score of 70 or above depression is considered to be severe. Ten items are
worded positively and ten items are worded negatively (Zung, 1965). In this study test-retest reliability proved to be satisfactory that shows Cronbach’s alpha = .94.


The Perceived Stress Scale (PSS) is an instrument intended to provide a global measure of the extent to which an individual perceives his or her life to be stressful (Cohen, Kamarck, & Mermelstein, 1983). The Perceived Stress Scale is a fourteen-item scale that asks the respondents to answer a series of questions as they pertained to them in the last month. The method of answering the questions is a likert scale format with answers ranging from 0 being an answer of never to 4 being an answer of very often. The PSS is an empirically established appraisal based index (Cohen, Kessler, & Gordon, 1995) very few of which measure global stress experience.

Whereas more objective tools are typically designed to measure the number of potentially stressful events or situations occurring in an individual’s life, the PSS attempts to assess the respondent’s beliefs about those events, which may provide a more accurate description of the actual level of stress being experienced. The PSS provides an assessment of the amount of stress individuals believe they are experiencing, which for some purposes may be a more effective tool than an instrument that measures the number of stressors present in an individual’s life. Instruments that assess stress based on the number of stressors present in a person’s life fail to take into account the way that people interact with those stressors and the influence that coping resources may have on the actual experience and perception of stress.

Although the PSS does not measure the amount of coping resources available to a respondent or the skills necessary to effectively utilize those resources, by assessing how stress is being perceived, the effects of those resources are measured
indirectly. The PSS has strong psychometric properties with coefficient alpha reliabilities ranging between .84 and .86. The measure correlates with physical and depressive symptomology measures between .52 and .70, and .65 and .76, respectively (Cohen et al., 1983).

**Scoring**

The scale yields a single score and a higher score is indicative of greater levels of perceived stress, with items 4, 5, 6, 7, 9, 10, 13, being reversed scored. The scores thus range from 0 to 56, higher scores indicating greater amount of stress. A higher total score indicates a higher level of perceived stress (Cohen et al., 1983). In this study test-retest reliability proved to be satisfactory that shows Cronbach’s alpha = .77.

**3.4.7. Vulnerability to experience stress (Miller and Smith, 1985).**

Vulnerability scale is part 3 of the Stress Audit (Miller, and Smith, 1985). The part 1 and 2 refer to stress from situations and stress from symptoms. The part 3 has 20 items, which refer to factors that have been found to influence the vulnerability of an individual to stress. In this study part 1 and 2 were not used, because answering them requires a lot of time, leading to exhaustion among depression patients. Hence, only part 3 was made use of. “This questionnaire is the only stress assessment instrument peer reviewed and listed in the O.K. Buros’ 10th Mental Measurements Yearbook, published by the Buros Institute at the University of Nebraska, which speaks to its scientific integrity” (stressdirections.com, 1999).

As for reliability and validity, this test has high accuracy. “In tests, our internal consistency coefficients ranged from .78 to .98 (with 1.00 being perfect), and test-retest coefficients ranged from .76 to .98 (again, 1.00 is effect)” (Miller, and Smith, 1999, stressdirections.com, 1999). The validity was proved as well.
In this study the test-retest reliability was calculated on 30 post-graduate students, and Cronbach’s $\alpha$ obtained was 0.96, and it is very high.

Scoring

To get the score, the figures were added up and then 20 were subtracted from the total. Any number found over 30 indicated a vulnerability to stress. Scores found between 50 and 75 indicated serious vulnerability, and scores over 75 were extremely vulnerable (Miller and Smith, 1985)

3.4.8. Presumptive Stressful Event Scale (PSE-Scale) (Singh, et, al. 1984)

All the patients were administered the presumptive stressful life event scale (PSLES) (Singh, et, al. 1984). The PSLES is a 51-item instrument, which measures stressful life events on two time scales; (a) lifetime and (b) the past year. It is standardized for an Indian population, and uses stressful life-events relevant to Indian culture (for example: conflict over dowry, lack of son, conflicts in the extended family, going on a pilgrimage, prophecy of astrologers, damage to crops, etc.). Norms have been established for each event covered in the scale. The scale is easy to use and can be administered to both literate and illiterate subjects.

Scoring

In the PSLES scale, the items have been assigned weightage in an arbitrary fashion e.g. the item 'Minor violation of law' has been assigned a value of 29 and the item 'death of spouse' possible value of 93 (Deshpande and Behdervandi, 2001). All other items have been assigned values between these two extremes. These scales give an idea about the severity of change experienced but not about the possible response of the subject to the change.
Cut-off points for PSLES (349) is different from the originally proposed cut off points of 150 and 159.4 respectively (Masuda, and, Holmes, 1967) probably because of the difference in life styles, family structures etc.

3.5. Data Collection

The questionnaires were administered in two sessions since there were nine of them and they were administered individually to make the participants understand the items properly. All study visits took place in a quiet, private room in the hospitals where the project was fully explained and any questions answered. The participants were then guided through, and were asked to complete the questionnaires.

3.6. Data Analyses

(1) To compare the three groups of subjects ANOVA was used. (2) Stepwise Multiple Regression Analysis was used to identify the variables that most closely predict the perceived stress and depression score. (3) Pearson’s Correlation Coefficient was used to examine the correlation between variables. (4) Kruskal Wallis’s Test was used to examine the difference in the kinds of stressful life events that the three groups experienced.