CHAPTER 5
DATA EXTRACTION AND ANALYSIS

“RELEASE OF STRESS THROUGH
REGULAR PRACTICE OF SMET
COMPLEMENTS OUR GROWTH”

-NAGENDRA AND NAGARATHNA
Data for BWC, EQ, GHQ and PI were taken before (pre) and after (post) the five days intervention of SMET program for ONGC participants.

5.1 Data Collection

**BWC recording condition:** We collected brain wave coherence data using 2-channel electrode locations C3 and C4. We referenced these scalp locations to linked earlobes, with the ground at the forehead. We did all recordings in similar conditions using Brain Master 2 Channel brain wave version 2.0 for clinical from Bio-Medical Instruments, Inc., Warren, Michigan. We chose sampling frequency rate of 256 Hz. Protocol of setting file was brain wave Pro 2 Channel Alpha Synchrony. Run of length was 10.0 minutes. We kept the electrode impedances below 10 KΩ to ensure noise-free, accurate, and good brain wave recordings. [61],[62]

**Experimental Paradigm:** We studied BWC, EQ, GHQ, and PI for same subject at the same time of the day for pre and post data. During BWC recording, each subject was resting on the chair with the eyes closed for 10 minutes in Bio-Field Energy Laboratory of S-VYASA University.
EQ, GHQ and PI: The EQ, GHQ and PI data were collected before (pre) and after (post) the 5 days SMET program. The three questionnaires (EQ, GHQ and PI) were filled up by the subjects on the first and last days of five days SMET intervention. EQ test was administered first, followed by GHQ test and PI Test. A separate group was assigned to administer the test on participants under the supervision and guidance of psychologist, in this way masking or blinding was achieved in this study. The time of administering the questionnaire was before lunch break (between 9am-1pm) which was the same on the first day and the last day of intervention.

5.2 Data Scoring

The data analysis of GHQ showed that 28 subjects were healthy (the cut-off score was 9) and the remaining 44 were unhealthy.

BWC Calculation and Training: BrainMaster calculates and displays coherence for different components as delta, theta, alpha, beta, and gamma. In addition, we can set a threshold between 0.01 and 0.99 for training. The operator can select any or all of the components for sound feedback; hence coherence training was easy. In addition, we can show the coherence on the summary screen, and read it from the Excel spreadsheet containing the minute-by-minute statistics. Coherence between 0.0 and 0.4 in brain wave is not significant, because random signals can have a small amount of coherence. However, coherent values above 0.5 and especially exceeding 0.6 are significant for brain wave training.\textsuperscript{[69]}
**EQ** - It uses scoring such as 0, 5, 10, 15 and 20. The total score was calculated using scoring key and then with the help of interpretation of EQ score as shown in Table 5 and then the percentile value and interpretation was assessed.

**GHQ** - This 28 items test using binary method of scoring (0, 0, 1, 1) yields assessment on four robust subscales: somatic symptoms (SS), anxiety and insomnia (AI), social dysfunction (SF), severe depression (SP). Lower the scores in GHQ, the better state of health.

**PI** - Tables 7.1, 7.2 and 7.3 are showing the items in their respective Guṇa (personality)

Responses to inventory items are received in terms of choices between very much, much, moderate, little or not at all. These raw answers are then converted to numerical values from 5 to 1 respectively. Answers to all items on all three scales are converted to 5,4,3,2 or 1, as above. Addition of scores on all items on a particular scale gives the individual’s total score on that scale. In this way, each individual receives a score on each of the three scales. Percentage of each was calculated by dividing the score of each Guṇa with total score and multiplying by 100.

### 5.3 Data Analysis

All statistical analysis was carried out using the version 16.0 of the Statistical Package for Social Sciences (SPSS) software. The Kolmogorov-Smirnov test showed that the data was not normally distributed. Hence, we have used the Wilcoxon signed rank test to compare means of the data. Finally, Non-Parametric Spearman’s Rho test was used to evaluate correlations between BWC, EQ, GHQ and PI scores.
CHAPTER 6

RESULTS

SOURCE: SMET MODULE, S-VYASA UNIVERSITY
RESULTS

6.1 BWC: Analysis on mean score showed 19.31% increase \((P=0.03)\) in Delta, 5.04% of increase \((P=0.65)\) in Theta, 15.4% increase \((P=0.09)\) in Alpha, 1.67% decrease \((P=0.54)\) in Beta and 18.68% increase \((P=0.07)\) in Gamma BWC between pre and post intervention measurements \((n=72)\). 28.22% significant increase \((P=0.02)\) in Delta BWC of unhealthy subjects \((n=44)\) was observed. [Table 8.1]

6.2 EQ: EQ analysis \((n=72)\) showed 72.02% significant increase \((P<0.001)\) in post intervention as compared with pre intervention. Both healthy and unhealthy participants showed significant increase (76.45% and 70.54% respectively) in EQ within the groups whereas no significant change in between the groups was observed. [Table 8.2]

6.3 GHQ: Furthermore, there was 68.25% significant decrease \((P<0.001)\) in Somatic Symptoms \((GHQ_SS)\), 66.29% significant decrease \((P<0.001)\) in Anxiety and Insomnia \((GHQ_AI)\), 65.00% significant decrease \((P<0.001)\) in Social Dysfunction \((GHQ_SF)\), 87.08% significant decrease \((P<0.001)\) in Severe Depression \((GHQ_SP)\) and 71.47% significant decrease \((P<0.001)\) in all medical complaints \((GHQ_Total)\). Moreover, significant decrease in both healthy and unhealthy (the cut-off score was 9) subjects within the groups was also observed in general health aspect. [Table 8.3]

6.4 PI: It was observed that there were significant decrease in Tamas and Rajas scales and significant increase in Sattva scale of healthy, unhealthy and all subjects within the groups whereas in between the group there was no significant change. [Table 8.4]
6.5 Correlation studies

i) For n=72 (healthy & unhealthy): The results from the Table 8.5 (summary of correlation study for n=72) for healthy & unhealthy participants shows that all the BWC rhythms were significantly correlated with other BWC rhythms. For example, the correlations between Delta (pre) and Theta (pre) or Delta (pre) and Alpha (pre), etc were found significantly correlated. Similarly, all the subscales of EQ, GHQ and PI were significantly correlated with other subscales. It was observed that there were no significant correlations between BWC, EQ, GHQ and PI. [Table 8.5]

ii) Summary of correlation study for healthy participants (n= 28): Table 8.6 (summary of correlation study for healthy participants) showed that all the subscales of BWC, EQ, GHQ and PI were significantly correlated with other subscales. There was a correlation between somatic symptoms and Theta (pre), Alpha (pre) and Tamas (post). [Table 8.6]

iii) Summary of correlation study for unhealthy participants (n=44): Summary of correlation study for unhealthy participants showed all the subscales of BWC, EQ, GHQ and PI were significantly correlated with other subscales. It was observed that there was correlation between somatic symptoms and Theta (pre), Alpha (pre) and Tamas (after). [Table 8.7] It was observed that there were no significant correlations between BWC, EQ, GHQ and PI.

Thus, the results from the correlation studies revealed that there were no significant correlations between BWC, EQ, GHQ and PI.