

CHAPTER-III

METHOD AND PROCEDURE

In this chapter, the procedure adopted for the selection of the subjects, selection of variables, tools used, criterion measure, collection of data, reliability of data and statistical procedure that were required to analyze the data has been presented.

Design of the study

This was a survey study focused to assess the emotional intelligence, metabolic equivalent of task or physical activity and eating behaviour among obese and non-obese college women.

Selection of subjects

The sample of 2000 college women having age range between 18 to 25 years studying in different degree classes in various colleges of Chandigarh affiliated to Panjab University were selected by using random sampling technique. BMI was administered to evaluate subject's level of obesity. On the basis of BMI, four groups namely underweight (BMI<18.5), normal weight (18.5-22.9), overweight (23-24.9) and obese (BMI>25) were formed as recommended by ICMR (2009). Each group was consisted of 100 subjects. In order to determine the body mass index (BMI), weight and height of all subjects was measured and recorded in kilograms and meters. Body Mass Index of the subjects was determined by using the following formula.

$$\text{BMI} = \frac{\text{Weight (Kg)}}{\text{Height (mts)}^2}$$

Selection of variables

The following variables were investigated in this study:

1. Emotional intelligence
2. Metabolic equivalent of task (MET)
3. Eating behaviour

Tools used

1. **Emotional Intelligence scale (Anukool Hyde, Sanjyot Pethe and Upinder Dhar 2002):** was used to measure emotional intelligence.
2. **International Physical Activity Questionnaire (IPAQ) protocol (2005):** was used to measure the metabolic equivalent of task (MET) in college women.
3. **EAT-26 (Garner, Olmsted, Bohr & Garfinkel, 1982):** was used to measure eating behaviour among college women.

Criterion measures

The criterion measures chosen for this study were:

1. Emotional Intelligence was judged by using Emotional intelligence scale (Anukool Hyde, Sanjyot Pethe and Upinder Dhar 2002).
2. International physical activity Questionnaire (IPAQ) protocol (2005): was used to measure the metabolic equivalent of task (MET) in women by Craig, et al. 2003 revised in 2005.
3. Eating behaviour was evaluated by Eating Attitude Test (EAT-26) questionnaire (Garner, Olmsted, Bohr, & Garfinkel, 1982).
4. Total body weight was recorded to the nearest half a kilogram by using a weighing machine.
5. Height was recorded to the nearest inch with the help of steel tape and stadiometer.
6. Body Mass Index was determined by dividing body weight in kilogram by the square of body height in meters.

Collection of data

Emotional Intelligence Scale

Emotional Intelligence of the selected subjects was judged using by using Emotional intelligence scale (Anukool Hyde, Sanjyot Pethe and Upinder Dhar, 2002); consisting components of self-awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation, commitment and altruistic behaviour. (Appendix- A)

Self-awareness: Self-awareness is being aware of one self and was measured by items 6, 12, 18, 29. These items were “I can continue to do what I believe in even under severe criticism”, “I have my priorities clear,” “I believe in myself,” and “I have built rapport and made and maintained personal friendships with work associates.”

Empathy: Empathy is feeling and understanding the other person and was measured by items 9, 10, 15, 20, and 25. These were “I pay attention to the worries and concerns of others”, “I can listen to someone without the urge to say something”, “I try to see the other person’s point of view”, “I can stay focused under pressure” and “I am able to handle multiple demands”.

Self-motivation: Self-motivation is being motivated internally. Self-motivation was measured by items 2, 4, 7, 8, 31, 34. These were “people tell me that I am an inspiration for them”, “I am able to make intelligent decision using a healthy balance of the emotions and reason”, “I am able to assess the situation and then behave”, “I can concentrate on the task at hand in spite of disturbances”, “I think feelings should be managed” and “I believe that happiness is an attitude”.

Emotional stability: Emotional stability was measured by items 14, 19, 26 and 28. These were “I do not mix unnecessary emotions with issues at hand”, “I am able to stay composed in both good and bad situations”, “I am comfortable and open to novel ideas and new information”, “I am persistent in pursuing goals despite obstacles and setbacks.”

Managing relations: Managing relations was measured by items 1, 5, 11 and 17. The statements that measure these factors were “I can encourage other to work even when things are not favorable”, “I do not depend on others’ encouragement to do my work well”, “I am perceived as friendly and outgoing” and “I can see the brighter side of any situation”.

Integrity: Integrity was measured by items 16, 27, and 32. “I can stand up for my beliefs”, “I pursue goals beyond what is required of me”, and “I am aware of my weaknesses”, were the statements that measure this factor.

Self-development: Self-development was measured by items 30 and 33 which were “I am able to identify and separate my emotions” and “feel that I must develop myself even when my job does not demand it.”

Value orientation: Value orientation was measured by items 21, 22. The statements were “I am able to maintain the standards of honesty and integrity” and “I am able to confront unethical actions in others”

Commitment: Commitment was measured by the items 23 and 24. “I am able to meet commitments and keep promises” and “I am organized and careful in my work” measure this factor.

Altruistic behaviour: Altruistic behaviour was measured by the items 3 and 13. The items were “I am able to encourage people to take initiative”, and “I can handle conflicts around me”.

Scoring: This test was a five-point Likert type scale. Each answer scores 1, 2, 3, 4, and 5 points. Scores were added separately for all the ten factors.

Scoring for the emotional intelligence scale has been presented in table 3.1.

Table 3.1: Scoring systems for the emotional intelligence scale

Response	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Scores	5	4	3	2	1

The total score was the sum of all 10 domain scores. The minimum and maximum scores for each domain was 1 and 5 respectively. The maximum and minimum total scores were 170 and 34 respectively. Individual with high score was considered to have high emotional intelligence.

Reliability

The reliability of the scale has been determined by calculating reliability coefficient on a sample of 200 subjects. The split- half reliability coefficient has been found to be 0.88.

Validity

Besides face validity, as all items were related to the variable under focus, the scale had high content validity. It is evident from the assessment of experts that items of scale were directly related to the concept of emotional intelligence. In order to find out the validity from the coefficient of reliability (Garrett, 1981), the reliability index was calculated, which indicated high validity on account of being 0.93.

Testing procedure

A group of 25 subjects was assembled and seated in class room setting with proper seating arrangements. The subjects were briefed about the purpose of the test. They were assured that the scores obtained in the test would be kept confidential. There was no time limit for test however, it was made sure that no problem remains unanswered. After that questionnaire were distributed to the subjects. The research scholar read about the instructions clearly in a slow speed from the test booklet. Then the research scholar marked her answers for sample items on the model answer sheet hung upon the black board and explained the procedure of recording answers to the subjects. It was ensured that the instructions had been understood by all correctly. After making sure that the subjects had understood clearly how to enter their responses in the answer sheet, they were asked to proceed with recording answers in the form of agreement on a five point scale. The answer sheets were scrutinized, before

scoring so that no item was answered with more than one response on five point scale. The scoring was done manually. The raw scores for all the items were counted and recorded for analysis purposes. A high score on the scale indicated higher level of emotional intelligence. Scoring for sub domains was also carried out in addition to total emotional intelligence.

International Physical Activity Questionnaire (IPAQ)

The International Physical Activity Questionnaire (IPAQ) long scale was developed by Craig, et al. 2003 revised in 2005 with the purpose of estimating health related physical activity (Appendix-B). The International Physical Activity Questionnaire can be used in adolescents and adults from 15-69 years of age. The International Physical Activity Questionnaire estimates frequency (day/week) and duration (minutes or hours/week) of different intensity physical activities (moderate and vigorous), including walking activity during the previous seven days. It also includes the time spend sitting. The long version consist of 27 questions in four physical activity domains and one sedentary domain: occupational, transportation, housework/house maintenance, leisure-time physical activity, and the time spend sitting (sedentary activity domain). Continuous measures of physical activity were reported with the International Physical Activity Questionnaire. Continuous variables were the minutes/week or MET-minutes/week of moderate to vigorous physical activity. All continuous scores were expressed in MET-minutes/week.

Scoring

Physical activity data obtained from the International Physical Activity Questionnaire was computed for metabolic equivalent of task (MET)-minutes per week, calculated as the metabolic equivalent of task intensity multiplied by the minutes for each activity over the seven day period. Metabolic equivalent of task were multiples of the resting metabolic rate and a metabolic equivalent of task minutes were computed by multiplying the metabolic equivalent of task score of an activity by the minutes. With consideration of different intensities of activity components, reported weekly minutes were multiplied by 8 MET for

vigorous activity, and by 4 MET for moderate activity, and 6.0 MET for cycling, and 3.3 MET for walking. Energy expenditure values from week 1 (Days 1–7) for the International Physical Activity Questionnaire were summed and divided by the number of days to provide average daily physical-activity related energy expenditure. The physical activities were converted to metabolic equivalent scores (MET scores).

Validity and Reliability

The reliability and validity of the International Physical Activity Questionnaire (IPAQ) was tested by Craig et al 2003 on 14 centers from 12 countries. Test-retest and reliability coefficients of the questionnaires was 0.81 with criterion validity $r = 0.30$. Maddison et al. 2007 also found the same results on New Zealand adults aged 18 to 64 years. Reliability coefficients of the International Physical Activity Questionnaire was 0.79 with ($p = 0.33$) validity.

Testing procedure

The data was collected by administering the questionnaire International Physical Activity Questionnaire Long scale on the selected subjects. Prior to the administration of the test, the subjects were given a brief of the objectives and the purpose of the investigation. Meaning of each statement was clearly explained while they were filling the questionnaire. Procedures were examined to determine that all necessary information and responses had been provided by the subjects.

Eating Attitudes Test (EAT-26)

EAT-26 (Appendix-C) the most widely used standardized screening tool to measure disordered eating attitudes and behaviour having following three subscales:

1. The Dieting subscale that assesses pathological avoidance of fattening foods and preoccupation with thinness.
2. Bulimia subscale that assesses tendencies two binge and purge, and

3. Oral control subscale that assess the degree of self-control over eating.

Scoring

The EAT-26 Test was divided into two parts. First part constituted of 26 questions for each item the respondent indicated how often he/she was engaged in the behaviour that was described using a 6 point likert scale, ranging from “Always to Never” as shown in table 3.2.

Scoring for the Eating attitude test (EAT -26) has been given in table 3.2.

Table 3.2: Scoring system for the eating attitude test (EAT-26)

Item	Always	Usually	Often	Sometimes	Rarely	Never
Score for questions 1-25	3	2	1	0	0	0
Score for question 26	0	0	0	1	2	3

The subscale score were computed by summing up all the items assigned to that particular subscale (Dieting items: 1, 6, 7, 10, 11, 12, 14, 16, 17, 22, 23, 24, 25; Bulimia & Food Preoccupation items: 3, 4, 9, 18, 21, 26; Oral Control items: 2, 5, 8, 13, 19, 20).

The second section was concerned with four Behavioral questions aimed at determining the presence of extreme weight-control behaviours as well as provided an estimate of their frequency. Each question had two choices Yes/No.

Item scores were added together for a total EAT-26 score. If the subjects score was 20 and above or answer to any of the behavioral questions (A-D) was reported as ‘yes’ then the subjects were considered to have eating disorder.

Instrument validity and reliability

For evaluation of eating attitude, EAT-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982) test was used that was a standardized, reliable and valid

questionnaire (Lee et al., 2002; Mintz & O'Halloran, 2000) which has been used in several international and national studies (It was used as a screening instrument in the 1998 National Eating Disorders Screening program in America).

Testing procedure

The data was collected by administering the questionnaire EAT-26 on the subjects in their respective groups. Prior to the administration of the test, subjects were given a brief of the objectives and the purpose of the investigation and were told that the results of the investigation would be beneficial to them as well as other professionals. Meaning of each statement was clearly explained while they were filling the questionnaire.

Weight

Body weight was taken with a portable weighing machine. The reliability of the machine was checked. While taking each measurement the zero error of the machine was also examined both before asking the subject to stand on its platform and after the subject gets down. The barefooted subjects were asked to stand straight with equal weight on both feet on the horizontal platform and final readings were taken in kilogram (kg).

Height

Height of the subjects was measured with the help of a stadiometer. The subjects were asked to stand erect, barefooted on a plane horizontal surface with their heels, back of the shoulders and head touching the stadiometer rod. The subjects were asked to stretch their body upward as much as possible. Then the rod was held vertically in front of the subject and the cross bar of the rod was adjusted so that its lower edge touches the highest point of the subject's head. The subject's heels were watched to make sure they did not leave the ground and the readings were recorded in meters.

Body Mass Index (BMI)

BMI has been a screening tool to estimate a healthy body weight and used to identify possible weight problems including underweight, normal weight, overweight and obesity, based on body weight and height.

To calculate BMI height in meters and weight in kilograms of the subjects were used and thereby, Body Mass Index was calculated by dividing body weight in kilograms by the square of body height in meters.

As per the Indian Council of Medical Research & Union Health Ministry of India (2009) has proposed new guidelines for weight status categories associated with BMI ranges for adults are shown in table 3.3.

Table 3.3: Standard weight status categories and BMI ranges according to ICMR 2009 guidelines

Weight Status	BMI (kg/m ²)
Underweight	Below 18.5
Normal	18.5 – 22.9
Overweight	23.0 – 24.9
Obese	25.0 and Above

According to the Body Mass Index classification given by Indian Council of Medical Research (2009) the subjects having a BMI value below 18.5 were considered as underweight, while a BMI of 18.5 to 22.9 considered as normal weight, 23 to 24.9 were considered as overweight and above 25 suggests the person is obese.

Reliability of data

The reliability of data was established by reliability of tests, tester's competency and subject's reliability through test retest method and by using reliable and valid instruments.

Testers' competency was evaluated together with test-retest method whereby consistency of retests was obtained by product moment correlation. The data were collected from randomly selected ten subjects through test-retest. The test-retest scores for each variable were then correlated and the coefficients thus obtained have been given in table 3.4.

Table 3.4: Reliability coefficients of test- retest scores in emotional intelligence, eating attitude and metabolic equivalent of task

S. No.	Tests	Coefficient of Reliability (r)
1.	Self- awareness	.89*
2	Empathy	.72*
3	Self-motivation	.77*
4	Emotional stability	.82*
5	Managing relations	.87*
6	Integrity	.79*
7	Self-development	.82*
8	Value- orientation	.83*
9	Commitment	.85*
10	Altruistic behaviour	.88*
11	Emotional intelligence (total)	.81*
12	Metabolic equivalent of task	.92*
13	EAT-26	.92*

*Significant at .05 levels

From the test-retest co-efficient of correlation (Table-3.4), it was evident that the tester reliability was significantly high at .05 levels of confidence. The correlation co-efficient indicated the reliability of the tests selected, as very high correlations were obtained, when the tests were repeated.

Statistical Analysis

The collected data has been analyzed statistically. To find out the significant difference between the obese and non-obese college women on emotional intelligence, physical activity status, and eating behaviour one way analysis of variance (ANOVA) was applied. Scheffe's post hoc test was applied to find out the significance difference between paired means. In addition to descriptive statistics, the relationships among emotional intelligence, physical activity status, and eating behaviour of college women were established by computing coefficient of correlation. For testing the hypothesis, the level of significance was set at .05.