The primary aim of the present investigation was to study psychological factors and family characteristics in adolescents “At Risk” for developing Type II Diabetes in comparison to Healthy Controls. The ‘At Risk’ group of adolescents comprised of those adolescents having either parent with Type II Diabetes. The healthy group comprised of adolescents coming from families with no family history of any chronic disease. The two groups were compared on Body Mass Index and Health Habits, Measures of Positive Affect (viz Optimism, Generalized Self Efficacy and Mental Health), Measures of Negative Affect (viz Anger Experienced, Anger Expression Styles and Depression), Personality, Perceived Parental Bonding, Measures of Stress and Ways of Coping.

In addition gender differences in ‘At Risk’ Adolescents were also explored. A small group of Diabetic Adolescents were compared with ‘At Risk’ Adolescents and Healthy Controls on psychological and family characteristics. Another aim of the investigation was to study the relationship between parent-child dyads on various psychological factors.

Different Health Habits viz Eating Habits, Exercise and Fitness and Avoidance of Use of Alcohol and Drugs were measured using the Health Habits Inventory by Atwater (1995).

Body Mass Index which also known as Quetelet Index for the man who first proposed it over 100 years ago was used as a measure of Physical Fitness. The formula to calculate Body Mass Index was:

\[
\text{Body Mass Index} = \frac{\text{Weight in Kgs}}{(\text{Height in meters})^2}\frac{}{}.
\]

Measures of Positive Affect included in the study were Optimism, Generalized Self Efficacy and Mental Health. Optimism was measured using a short form of Optimism Scale by Scheier and Carver (1985).
To measure Self Efficacy, the Generalized Self Efficacy Scale devised by Schwarzer and Jerusalem (1995) was used. For measuring Mental Health, the WHO measure of Mental Health adapted for use in India by Wig (1999) was used to measure Mental Health with its three dimensions viz Being Comfortable with Self, Being Comfortable with Others and Perceived Ability to Meet Life's Demands.

Measures of Negative Affect included were Anger Experienced, Anger Expression Styles and Depression. Spielberger's (1988) State Trait Anger Expression Inventory was used to measure Anger Experienced and Anger Expression Styles. Beck Depression Inventory devised by Beck et al., (1967) was used to measure Depression.

Different Personality Dimensions were included. Eysenck’s Personality Questionnaire – Revised (1985) was used to get scores on Extraversion/Introversion, Psychoticism, Neuroticism and Social Desirability. The State-Trait Anxiety Inventory (STAI) devised by Spielberger et al., (1970) was used to measure subjects State and Trait Anxiety. The Personality Dimension of Externality/Internality was measured by using Health Locus of Control (HLOC) Scale devised by Wallston and Wallston (1982).

Perceived Parental Bonding was measured by Parental Bonding Instrument by Parker et al., (1979). It has two dimensions viz Perceived Parental Care and Perceived Parental Overprotection.

For measuring Stress the tests used were: the Presumptive Stressful Life Events Scale (PSLE) devised by Singh et al., (1984) was used to measure Life Event Stressors. Daily Hassles and Uplifts were assessed through Daily Hassles and Uplifts Scale by Delongis et al (1982). Stress Symptoms Rating Scale devised by Heilbrun and Pepe (1985) was used to measure Stress Symptoms. To assess different
coping strategies, the Ways of Coping (WOC) Questionnaire devised by Folkman and Lazarus (1985) was used.

The total sample consisted of 325 subjects divided into 3 groups. The age range was 14-18 years. They were randomly selected from different schools and clinics in the tricity viz. Chandigarh, Panchkula and Mohali.

**Group 1** comprised of 200 Adolescents ‘At Risk’ (i.e. having either parent with Type II Diabetes, out of which 100 were males and 100 were females. Further out of the 100 males, 50 were those who had a diabetic father and 50 were those who had a diabetic mother. Similarly, out of the 100 females, 50 were those who had a diabetic father and 50 were those who had a diabetic mother.

**Group 2** comprised of a comparison group of 100 Healthy Controls, out of which 50 were males and 50 were females, coming from families with no family history of any chronic disease.

**Group 3** comprised of 25 adolescents with Type II Diabetes in the age range of 17-21 years which was included for comparison purposes.

Data was collected in two phases. In the first phase data was collected from Adolescents ‘At Risk’, Healthy Controls and the Diabetic group.

In the second phase, data was collected from the parents of ‘At Risk’ adolescents. There were 100 diabetic mothers and 100 diabetic fathers in the age range of 38-50 years. They were administered various tests to measure Health Habits, Mental Health, Optimism, Personality, Stress, Anger Experienced, Anger Expression Styles and Depression. The purpose was to find common variance diabetic parents showed with their offspring on these dimensions.

The scoring was done as per the manual of each test/questionnaire used in the investigation.
Subjects were matched on Socio Economic Status. All the subjects were explained about the nature and aim of the investigation and their role in the study, and informed consent was observed from all the subjects before they were enlisted as subjects.

The raw scores were analyzed using appropriate statistical techniques. Means and Standard deviations for all the groups were calculated. t-ratios were calculated to find out the significance between various groups on the measured variables. Analysis of Variance, Discriminant Functional analysis, and Bivariate Correlations were also performed.

Results revealed the following:

**T-RATIOS**

A comparison of the mean scores and t-ratios of adolescents 'At Risk' and Healthy Controls revealed that significant differences emerged on the following: Body Mass Index, Eating Habits, Exercise and Fitness, Avoidance of Use of Alcohol and Drugs, Optimism, Generalized Self Efficacy, Being Comfortable with self, Being Comfortable with Others, Perceived Ability to Meet Life's Demands, Total Mental Health, State Anger, Trait Anger, Anger In, Anger Out, Anger Control, Depression, Extraversion, Psychoticism, Neuroticism, Lie Scale, Internal Health Locus of Control, External Health Locus of Control, State Anxiety, Trait Anxiety, Perceived Parental Care, Perceived Parental Overprotection, Stress Symptoms, Presumptive Stressful Life Events (past year), Daily Hassles, Uplifts, Confrontive Coping, Distancing, Self Controlling, Seeking Social Support, Accepting Responsibility, Escape Avoidance, Planful Problem Solving, and Positive Reappraisal.

A comparison of the mean scores and t-ratios of Male and Female adolescents 'At Risk' revealed that significant differences emerged on the following: Body Mass Index, Eating Habits, Exercise and Fitness,
Avoidance of Use of Alcohol and Drugs, Optimism, Generalized Self Efficacy, Being Comfortable with self, Being Comfortable with Others, Perceived Ability to Meet Life's Demands, Total Mental Health, State Anger, Trait Anger, Anger In, Anger Out, Anger Control, Depression, Psychoticism, Neuroticism, Lie Scale, Internal Health Locus of Control, External Health Locus of Control, State Anxiety, Trait Anxiety, Perceived Parental Care, Stress Symptoms, Presumptive Stressful Life Events (past year), Daily Hassles, Confrontive Coping, Distancing, Self Controlling, Seeking Social Support, Accepting Responsibility, Escape Avoidance, Planful Problem Solving and Positive Reappraisal.

**ANALYSIS OF VARIANCE (ANOVA)**

Analysis of variance was conducted with ‘At Risk’ Adolescents versus Healthy Controls and Gender as independent variables. The effect of these two independent variables singly and jointly was analysed for all 40 variables.

Of the 40 variables studied, the results of ANOVA revealed that F-ratios emerged significant for Healthy Controls versus ‘At Risk’ Adolescents on the following variables: Body Mass Index, Eating Habits, Exercise and Fitness, Avoidance of Use of Alcohol and Drugs, Total Health Habits, Being Comfortable with self, Being Comfortable with Others, Perceived Ability to Meet Life's Demands, Total Mental Health, Stress Symptoms, Internal Health Locus of Control, External Health Locus of Control, State Anxiety, Trait Anxiety, Optimism, Presumptive Stressful Life Events (past year), Depression, State Anger, Trait Anger, Anger In, Anger Out, Anger Control, Total Anger Expressed, Extraversion, Psychoticism, Neuroticism, Lie Scale, Generalized self Efficacy, Daily Hassles, Uplifts, Perceived Parental Care, Perceived Parental Overprotection, Confrontive Coping, Distancing, Self Controlling, Seeking Social Support, Accepting Responsibility, Escape Avoidance, Planful Problem Solving and Positive Reappraisal.
Of the 40 variables studied the results of ANOVA revealed that F-ratios emerged significant for gender on the following variables: Body Mass Index, Eating Habits, Exercise and Fitness, Avoidance of Use of Alcohol and Drugs, Total Health Habits, Being Comfortable with self, Being Comfortable with Others, Perceived Ability to Meet Life’s Demands, Total Mental Health, Stress Symptoms, Internal Health Locus of Control, External Health Locus of Control, State Anxiety, Trait Anxiety, Optimism, Presumptive Stressful Life Events, (past year), Depression, State Anger, Trait Anger, Anger In, Anger Out Anger Control, Total Anger Expressed, Extraversion, Psychoticism, Neuroticism, Lie Scale, Generalized self Efficacy, Daily Hassles, Uplifts, Perceived Parental Care, Confrontive Coping, Distancing, Seeking Social Support, Accepting Responsibility, Escape Avoidance, Planful Problem Solving and Positive Reappraisal.

Further the ANOVA tables revealed that for some variables the interaction of gender and Healthy Controls versus ‘At Risk’ Adolescents emerged to be significant. These included Being Comfortable with Self, Being Comfortable with Others, Total Mental Health, Stress Symptoms, Internal Health Locus of Control, External Health Locus of Control, Trait Anxiety, Depression, Anger In, Anger Out, Daily Hassles, Uplifts, Perceived Parental Care, Self Controlling, Accepting Responsibility, Positive Reappraisal.

**STEPWISE DISCRIMINANT FUNCTIONAL ANALYSIS**

The number of predictor variables in the present study being very large, it was thought appropriate to conduct stepwise Discriminant Analysis instead of standard or direct Discriminant Analysis to examine the efficiency of predictors into discriminant functions. The number of predictor variables used for the ‘At Risk’ Adolescents and Healthy Controls was 40. Results revealed a that set of 16 variables emerged significant when Healthy Controls and ‘At Risk’ adolescents were compared.
The predictors that emerged significant in this equation were Psychoticism, Uplifts, Body Mass Index, External Health Locus of Control, Internal Health Locus of Control, Seeking Social Support, Being Comfortable with Others, Distancing, Confrontive Coping, Accepting Responsibility, Perceived Parental Care, Planful Problem Solving, Escape Avoidance and Perceived Ability to Meet Life’s Demands.

The number of predictor variables used for male and female ‘At Risk’ Adolescents was 40. Results revealed a set of 15 variables emerged significant when male and female adolescent ‘At Risk’ were compared.

Overall it was found that a set of 15 predictors selected out of 40 variables were best discriminants of male and female ‘At Risk’ Adolescents. The predictors that emerged significant for this equation were Positive Reappraisal, Planful Problem Solving, Being Comfortable with Others, State Anxiety, Avoidance of Use of Alcohol and Drugs, Eating Habits, Presumptive Stressful Life Events (Past Year), Perceived Ability to Meet Life’s Demands, Neuroticism, Exercise and Fitness, Trait Anxiety, Generalized Self-Efficacy, Depression, Internal Health Locus of Control and Daily Hassles.

BIVARIATE CORRELATIONS

Parents’ scores on Body Mass Index, Health Habits (viz. Eating Habits, Exercise and Fitness, Avoidance of Use of Alcohol and Drugs), Measures of Positive Affect (viz. Optimism and Mental Health viz. Being Comfortable with Self, Being Comfortable with Others, Perceived Ability to Meet Life’s Demand and Total Mental Health), Measures of Negative Affect (viz. Anger Experienced, Anger Expression Styles and Depression), Personality and Stress were correlated with children’s scores on these variables. Correlations were calculated for the four Dyads i.e. Father-daughter, Father-Son, Mother-daughter and Mother-Son.
The variables that revealed significant correlations between ‘At Risk’ female adolescents and their fathers were: State Anger, Trait Anger, Anger In, Anger Out, Anger Control and Total Anger expressed.

The variables that revealed significant correlations between ‘At Risk’ female adolescents and their mothers were: Body Mass Index, Perceived Ability to Meet Life’s Demands, Stress Symptoms Internal Health Locus of Control, External Health Locus of Control, State Anxiety, Depression, Extraversion, Neuroticism and Lie Scale.

The variables that revealed significant correlations between ‘At Risk’ male adolescents and their fathers were: Body Mass Index, Being Comfortable with others, Perceived Ability to Meet Life’s Demands, Total Mental Health, Internal Health Locus of Control, Optimism, Depression, State Anger, Anger Out, Extraversion.

The variables that revealed significant correlations between ‘At Risk’ male adolescents and their mothers were: Eating Habits, Total Health Habits and External Locus of Control.

This investigation has attempted to find answers to some of the questions related to psychological aspects of diabetes and therefore raised some questions in terms of replication and interventions to reduce and combat spread of diabetes among adolescents with diabetic parents.