# ASSESSMENT OF EMOTIONAL AND BEHAVIOURAL PROBLEMS IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS: A COMPARATIVE STUDY

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**(Psychiatry)**

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# All India Institute of Medical Sciences, Jodhpur

## DECLARATION

I hereby declare that the thesis titled **"Assessment of emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus: A comparative study"** embodies the original work carried out by the undersigned in All India Institute of Medical Sciences, Jodhpur.

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# CERTIFICATE

This is to certify that the thesis titled **"Assessment of emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus: A comparative study."** is the bonafide work of **Dr. Adharshna T K**, carried out under guidance and supervision, in the Department of Psychiatry, All India Institute of Medical Sciences, Jodhpur, Rajasthan.

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## Summary

**Background:** Type 1 Diabetes mellitus is one of the most common chronic endocrine diseases in the pediatric population. The childhood and adolescent periods are significant time for physical and psychological growth and need utmost attention. To be diagnosed with T1DM itself is a stressor for both the child and parents. Further the long-term treatment and effects of complications which is frequent pose additional stressors throughout the lifetime. Those with this chronic illness may feel different from their peers due to regular monitoring of blood sugar, insulin injections, and having to follow some diet pattern. As these factors can cause psychological distress in children and adolescents. This distress may also affect the glycemic control of T1DM and vice versa. This study was planned to assess of emotional and behavioural problems in them that would be beneficial for comprehensive management of T1DM

**Aim:**

The primary aim of the study is to assess and compare the emotional and behavioural problems in patients with Type 1 diabetes mellitus and healthy controls.

**Methodology:**

The children and adolescents of 6-18 years of age with T1DM, diagnosed for a minimum of 6 months duration meeting the inclusion criteria were recruited after was explained about the objective and methodology of the study, and written informed consent/assent was taken. Age and gender-matched healthy controls were also recruited for a comparative study. Socio-demographic data and clinical details were recorded in a semi-structured interview. Parent/caregiver-rated CBCL 6-18years scale was used which has 8 subdomains. SDQ was also used which was a screening tool rated by parent/caregiver. It has 5 subdomains. Both the scales gave internalizing, externalizing and total scores. Hindi version of SDQ scale was used. CBCL scales were translated into Hindi by the WHO method of forward and backward translation of scales. HbA1c was also recorded to assess glycemic control. Frequency of CBCL, SDQ scores was estimated. Mann-Whitney U test, Kruskal wallis and Spearman's rank-order correlation was done at done whichever is appropriate to find the association of the emotional and behavioural problems with socio demographics and clinical profile.

**Results**:

A total of 62 cases and 63 age and gender matched healthy controls were recruited. The mean age of cases were 11.4 ± 2.8 years. The mean age of controls were 11.6 ± 2.9 years. Majority of the cases were from Hindu religion (95.2%), joint family (58.1%), and from middle SES (53.2%) from rural background (69.4%). The maximum proportion of controls belong to Hindu (55%), nuclear families (68.2%) from middle socioeconomic status (69.8%) from urban background (71.43%).The profile of personal history of cases consisted of 72.6% of easy temperament and 19.4% of slow to warm up temperament. The time spent for physical activity per day was less than 1 hour in 61.3% and screen time was more than 4 hours per day in 15.8% of the cases. Among the controls, 79.3% was of easy temperament, 17.46 % slow to warm up. The time spend for physical activity per day was more than 1 hour in 69.8% and screen time was 2-4 hours per day in 31.7% and more than 4 hours per day in 28.5% of cases. The results of proportion of cases with internalizing, externalizing and total problems by CBCL scale was 37.1%, 25.8% and 59.7% respectively. This was comparatively higher than in the children and adolescent control group. Even though the frequency of problems were higher, the overall total CBCL score was below the cut off (clinical range). The comparison of internalizing, externalizing and total problem score of CBCL scale by Mann U Whitney tests was significantly higher in cases than in controls (p value = 0.035 ,p value= 0.003,p value = 0.001 respectively). Similarly externalizing and total problem score of SDQ scale was significantly higher in cases (p value <0.001 and 0.015) expect internalizing scores (p value =0.333). On assessing the association of socio demographics of cases with the total problem scores in CBCL scores, there was no statistically significant difference between the age groups, birth order, gender, place of residence, family type and socioeconomic status. The total problem score of CBCL was significantly higher in cases with celiac disease as comorbidity (p value=0.037). Those cases who with poor adjustment with peers had significantly higher CBCL scores (p value= 0.03) and those with adequate peer adjustment. The cases with slow to warm up and difficult cases had significantly higher CBCL scores than those with easy temperament (p value<0.001).The SDQ scores had significant association with cases having screen time more than 2 hours / day (p value < 0.005).No significant association was found with other clinical variables. Spearman correlation was used to find correlation between continuous variables like age of diagnosis of T1DM, Total duration of illness, HbA1c and current age of study participants with total scores of CBCL and SDQ. There is significant correlation of age of the participants and externalization

problems in CBCL scores. With increase in age there is increase in the externalizing problems in the cases (p =0.036).The age of onset was inversely correlated with the total CBCL and SDQ scores, but it was not statistically significant.

**Conclusion**

The emotional and behavioural problems in children and adolescents with T1DM were significantly higher in cases than in healthy controls as assessed by CBCL and SDQ scales. Internalizing problems were higher than the externalizing problems in the study population. Most common among those being anxious, withdrawn nature, emotional and peer relational problems in the CBCL scale. The relationship of other factors like current age, gender, birth order, education, socio economic status, family setting and caregiver/parents' demographics, were not statistically significant with the presence of problem behaviours. Those with difficult and slow to warm up temperament were seen to have more emotional and behavioural problems. Also, those with celiac disease as co morbidity had a significant association with problem behaviours. Those with higher scores in various emotional and behavioural problems had longer screen time and poor peer adjustment. Other factors like glycaemic index (HbA1c), age of diagnosis of T1DM, total duration of illness, number of hospitalizations, type of insulin regime, dietary habits didn't associate with overall total problem behaviours. Once diagnosed with T1DM, proper guidance and psychoeducation of child and parent/guardian should to done. Periodic screening of the patients for psychiatric symptoms will be beneficial for early detection and comprehensive management of T1DM.

# ABBREVIATIONS

| | |
|---|---|
| T1DM | Type 1 diabetes mellitus |
| CBCL | Child behavioural checklist 6-18years |
| SDQ | Strength and Difficulties Questionnaire |
| SES | Socioeconomic status |
| PHQ 9 | Patient Health Questionnaire |
| CPMS | Childhood Psychopathology Measurement Schedule |
| STAI | Spielberger State/Trait Anxiety Inventory |
| COVID-19 | Coronavirus 19 |
| SD | Standard deviation |
| IQR | Interquartile range |
| DAWN-QOL | The Diabetes Attitudes, Wishes, and Needs-Quality Of Life |
| ISCA | Interview Schedule for Children and Adolescents |
| N | Number of participants |

# INTRODUCTION

Type 1 Diabetes mellitus is a chronic disease in which the beta cells of the pancreas make little or no insulin. Without enough insulin, glucose builds up in the bloodstream instead of going into the cells. This leads to hyperglycemia. Polydipsia, polyphagia, and polyuria , the classic triad of symptoms associated with disease onset and overt hyperglycemia, are the diagnostic hallmarks of T1DM (1).

The formative years of life i.e. childhood and adolescence, are crucial for mental health. The brain undergoes fast growth and development during this period. The children and adolescents develop various social, cognitive and emotional skills that lay the foundation and influence their long-term mental health. The peak time during which people are diagnosed range from four to six years of age and again from 10 to 14 years of age (2). This makes the young children prone to physical and psychological problems which can lead to long standing complications if left unattended.

**Aetiology and Epidemiology of T1DM**

The exact aetiology of type 1 DM is unknown. Most of the research brings the picture of it having an autoimmune aetiology. T cell-mediated death of beta cells of the pancreas is thought to have a role in the pathogenesis of T1DM.The type of auto-antibody produced in the body has both genetic and environmental influences (3).

Type 1 Diabetes mellitus is one of the most common chronic endocrine diseases in the pediatric population(3). The most commonly affected population of T1DM disease are children and adolescents. Globally, 1,211,900 children and adolescents under the age of 20 are estimated to have type 1 diabetes. Each year, 108,200 children and adolescents under the age of 15 are estimated to receive a diagnosis. When the age range of individuals who are under 20 years of age are also included, this figure increases to 149,500 (4).India ranked top in the list for incidence and prevalence of type 1 diabetes cases in children and adolescents (0 –19 years) per annum. Epidemiological studies showed number of incident and prevalent cases in them to be 24 per 1000 / annum and 229.4 per 1000 /annum respectively (4).

**Management of T1DM**

The irreversible damage to the insulin-producing cells warrants the need for exogenous insulin replacement. The discovery of insulin in 1921-1922 was a significant therapeutic event in the management of T1DM (2).

For the efficient management of type 1 DM, a multidisciplinary team (including doctors, diabetes educators, nurses, dieticians, psychologists, and social workers), patient and their family members along with help from school or workplace is useful.

The purpose is to develop a healthy lifestyle and proper glycemic management to prevent severe hypoglycemia, hyperglycemia or ketoacidosis. Clinical presentation can vary from milder symptomology like tiredness, polyuria, excessive hunger or thirst to severe forms like dehydration, shock or Diabetic ketoacidosis. Complications related to T1DM and its sequalae can lead to damages in an organ specific manner (5).

Insulin therapy is the basic treatment modality in T1DM. Its goal is to achieve normal or near-normal blood sugar levels by replacing or supplementing the bodys' natural insulin.

There are several types of insulin. These types are classified according to how quickly the insulin begins to work and how long it remains active as shown in Table 1 (6).

Table 1: Insulin analogues

| **Rapid acting** | **Short acting** | **Intermediate acting** | **Long acting** | **Very long acting** |
|---|---|---|---|---|
| Insulin lispro, aspart, glulisine | Insulin regular | Insulin NPH, Lispro protamine | Insulin glargine, detemir | Insulin degludec, glargine |

**Burden of illness and challenges faced by children and adolescents**

Childhood and adolescent period are one of the most important time period in terms of physical and emotional growth, which in turn contributes to the current development and future wellbeing. Living with a chronic illness can cause various stressors in the both child and its family.

Diagnosis of T1DM itself poses to be a shock to parents and children themselves. Children and young people face additional emotional and psychological stress as they have to take life-long treatment in the form of insulin injections and have to maintain a proper diet plan as well as take precautions to prevent hypoglycemia, and in spite of which there are chances of acute or chronic complications (7). Additionally, the child must do routine blood testing to

track the different metabolic parameters. All of this necessitates a lot of discipline and commitment from the child and the family. If the child needs to be hospitalized, the family will experience significant financial strain in addition to emotional and physical stress. Children with this diagnosis may feel different from other children without the diagnosis. The resulting stress itself may cause worsening of the disease through psychological, physiological or related changes in the self-management of T1DM(8).

**Burden in family members of children with T1DM**

There is a reciprocal relationship between family environment and the well-being of their child. The family is under stress and strain when a child has a chronic illness. The transactional model clarifies how a youngster works to alter his immediate surroundings and how those surroundings, in turn, influence and transform the child (9).

The problems related to a diabetic child are different for different age groups. Parents give special attention to infants and toddlers to prevent any diabetes related complications and it is fully dependent on the parents. On the other side, parents experience the strain of providing daily care for a child who has recently received a diagnosis and find it difficult to adjust to it (10). The school going children mostly struggle with their identity of being sick and different from the peers. The dietary modifications also seem confusing for them and the parents. Adolescents are more likely to engage in risky behaviour and think of themselves as abnormal, which leads to poor compliance and other issues associated to diabetes (11). Parenting styles play an important role in positively or negatively reinforcing their behaviours. Families' understanding and concern regarding the illness also majorly influences management of diabetes. While DM1 offers considerable psychologic risks, most families are able to manage these difficulties without experiencing serious psychological issues, while a small percentage experience significant difficulties that increase the stress associated with T1DM (12).

**Diabetes care during the COVID-19 pandemic**

There has not been enough research done on the potential global effects of coronavirus disease 2019 (COVID-19) on kids and teens during the SARS-CoV-2 pandemic. According to reports, the disease affects these age groups less frequently, making up about 1-2% of all cases (13). Although the pathophysiological alterations in COVID-19 positive diabetic

patients are not yet fully understood, infection may have substantial consequences, including the emergence of comorbidities. Children and adolescents are spending more time at home because of the cancellation of extracurricular and school activities, which necessitates additional care from parents and caregivers. As a result of the limitations on activities and the closure of parks and other recreational facilities, sedentary behaviour has increased and daily energy expenditure has decreased. All of these changes could have a substantial impact on the child's ability to control their blood sugar, bringing more duties and stress on parents and caregivers (14).

**Rational of the study**

T1DM has been found to be associated with psychological issues and problem behaviour in children and adolescents compared to their peers without a chronic illness. However, there are some inconsistencies in the literature across different countries. The evidence gained from western studies might not apply to the Indian population owing to the difference in socio-cultural practices. Hence, this study was planned to assess the emotional and behavioural problem in children and adolescents, and its association with socio-demographic variables and clinical variables. This study will add to the existing literature and pave the way for further studies for integrated management of T1DM. Early identification of the emotional and behavioural problems and understanding their various predictive factors would improve the overall quality of life.

# REVIEW OF LITERATURE

Emotional and psychological burden in T1DM has been researched in multiple studies in many countries, but the Indian studies are comparatively less. The impact of the chronicity of T1DM has been studied in different age groups to see prevalence and kind of emotional problems. Various cross-sectional, prospective, case control studies and other reviews have been included in this literature review. The current literature review aimed to examine the prevalence of emotional and behavioural problems in T1DM and its association with various socio-demographics and clinical variables.

In a study by Kovacs et al. (1997), 92 young people with T1DM who were between the ages of 8 and 13 at the time of onset were monitored using a longitudinal, naturalistic methodology over a period of 10 years (15).Subjects were assessed repeatedly at each contact by means of the standardized, semi- structured, symptom-based Interview Schedule for Children and Adolescents (ISCA) and other scales. The mean age of subjects were 20 years. After 10 years of T1DM an estimated 47.6% of the sample had psychiatric disorders. The most common disorders were major depressive, generalized anxiety disorders and conduct disorder. Major depression was seen to have a much higher estimated prevalence (27.5%) than any other condition.The first year after diagnosis of illness had the greatest incidence rates of psychological issues. Maternal correlation with psychiatric issues of subjects was specifically assessed. Maternal depression was found to be a risk factor and particularly associated with depression in the participants. If mothers had any psychological illness during the initial years of diagnosis of T1DM, it likewise raised the probability of psychiatric disease in the subjects. Subjects that had a past history of psychiatric illness had increased risk of developing psychiatric illness later in life after diagnosis of T1DM. It was concluded that,it may be possible to identify diabetic children at risk for psychiatric disorders and facilitate preventative or further treatment efforts by keeping track of psychological status of patients, especially after the diagnosis of T1DM during the first year of illness (15).

Northam et al. (2005), conducted a longitudinal study of psychiatric morbidity and health outcome in type 1 diabetes (16). Ten years after onset of illness, 41 adolescents performed a self-report test to assess their mental health. At the time of diagnosis of T1DM, the information on metabolic control was documented prospectively. The frequency and type of

psychiatric disorders were identified, and the history of metabolic control and mental health status were compared. 37% of the adolescent met criteria for DSM IV psychiatric disorder, which was two to three times higher than community levels of psychiatric morbidity. When compared to adolescents without any disorder, those with a current mood (t = -2.83, P 0.01), anxiety (t = -3.77, P 0.001), or behaviour (t = 2.56, P 0.05) disorder as well as those with a history of poorly controlled diabetes scored higher for being diagnosed as having externalising behaviour problems. The rates of psychiatric disorder did not differ statistically with the glycemic control (16).

A large population based study was done by Sivertson et al. (2014). Self-reported data on diabetes and a variety of mental health symptoms, such as depression, anxiety, obsessive-compulsive behaviours, hyperactivity, impulsivity, inattention, perfectionism, resilience, sleep issues, and eating behaviour, were assessed in 9883 adolescents aged 16 to 19 (53% girls). 40 adolescents were classified as having Type 1 diabetes (prevalence 0.4%). The result of this was that the adolescents with Type 1 diabetes did not differ from their peers on any of the mental health related measures (17).

Medise et al.(2020), a study of psychological aspects in 40 adolescents with type-1 diabetes mellitus in Indonesia was done using self-rated SDQ scale. Six patients were found to have greater overall difficulty ratings. Eight patients had a high risk of conduct issues, seven had emotional symptoms, and five had hyperactivity or inattention. No correlation between gender, educational background, and total duration of disease on SDQ scale was seen (18).

In a cross-sectional study by Wake et al.(2000), subjects between 5 to 18 years of age were assessed and reports were obtained form 128 parents and 71 adolescents in Australia using Child Health Questionnaire (19). It found that children with diabetes have poorer health than children in normative samples especially on psychosocial and parent/family scales. With a HbA1c >8.8%, children aged 5 to 11 had significantly worse psychosocial health than children aged 12 to 18. Lower physical and psychological functioning were linked to diabetes symptoms and worries (19).

A study was done by Duffus et al, to assess behavioral screening in pediatrics population in Type 1 DM including 135 subjects. In Strength and difficulties questionnaire, patients of 11 to 14 years age scored significantly more than normative sample in total difficulties, emotional difficulties, and hyperactivity domains. Among 15 to 17 year old, patients with

type 1 diabetes (n = 59) scored significantly higher than the normative sample in all scales except conduct problem i.e. total difficulties, emotional problems, hyperactivity, peer problems, prosocial behaviours, and impact supplement (20).

As per a study by Kim et al, in adolescents with type 1 and 2 DM, a comparison was made between patients with diabetes and control groups using Youth Self Report. Relative to the control group, patients with diabetes exhibited higher scores in total problems (48.1 ± 12.4 vs 40.5 ± 13.3) ($p<0.05$). Additionally, glycemic control was assessed based on the mean HbA1c level. However, there were no significant differences in the scores in comparison with the glycemic subgroups (21).

In a study by Bernstein et al, cross-sectionally 150 patients aged 11 to 25 years with type 1 diabetes from an urban diabetes centre were recruited. Beck's Depression Inventory, the Screen for Child Anxiety Related Emotional Disorders-41 anxiety, and the Eating Disorder Screen for Primary Care were applied. It was reported that the patients with type1 diabetes mellitus who screened positive for psychiatric morbidity had twice the odds of having poor glycemic control with a higher HbA1c values (22).

Thiago et al. (2021), did a cross-sectional study including patients with T1DM in outpatient clinics. Patient Health Questionnaire – 9 ( PHQ-9) questionnaire and the DSM-5 criteria were used (23). Other scales were also used to assess the degree of emotional distress related to diabetes, eating disorder and clinical treatment adherence. Out of 166 patients, 53.6% female and remaining males. The median age was 33 years (range from 22-45.2). It was seen that prevalence of anxiety was 40.4% and depression was 25.5%, respectively. HbA1c was higher in patients who had higher levels of emotional distress (8.8% vs. 8.3%, $p = 0.009$), anxiety (9.0% vs. 8.3%, $p = 0.012$), and depression (9.0% vs. 8.4%, $p = 0.008$). The frequency of diabetes-related complications was the same in both cases (23).

Assiminia et al. (2019), explored the psychological and behavioural problems in adolescents with T1DM and compliance with treatment.It was found that children with diabetes frequently feel humiliated or feel different from their peers. Children's involvement in management of T1DM is very important. The relative calmness of young years of life is disturbed by several of hormonal, psycho-emotional, and physical changes that happen during puberty. In addition to diabetes, high-risk behaviours including increased sexual

activity, smoking and alcohol use, can lead to poorer glycemic control. Parents can also struggle with their emotional issues, including worry and distress related to illness of their children (24).

A review by Shalimova et al., included 97 studies from a PubMed search that was specific to cognitive dysfunction in adults with T1DM. It was concluded that higher prevalence of cognitive dysfunction and its faster progression is seen in those with type 1 diabetes. The mechanism of which was also synthesised as that the effects of altered glucose metabolism on the brain .The cognitive decline also worsens the quality of life of the patients (25).

A study by Zheng et al, to evaluate psycho-behavioral changes in children with T1DM recruited 45 Chinese children and fifty three healthy controls.CBCL scale was used the screening tool. Among the cases were 26 boys and 19 girls with a mean age of 10.40±3.01 years. Compared with the control group, the patients with T1DM had significantly higher mean scores for withdrawal, anxiety/depression, attention problems, delinquent behavior, aggressive behavior, externalizing problems, and internalizing problems ($P<0.017$). Moreover, the mean scores for somatic complaints in the poorly-controlled subgroup were significantly higher than those in the well-controlled subgroup ($t=3.582$, $P=0.001$) (26) .

Hood et al., did a study to find Depressive Symptoms in Children and Adolescents With T1DM and its association with some diabetes-specific characteristics. It included 145 youth and their parents as subjects.Child depression inventory was used to measure depressive symptoms. 22 of the total youths (15.2%) scored at or above the clinical cutoff. Young people with elevated depressive symptoms, were more likely to be female ($P = 0.008$), have lower blood glucose monitoring frequency ($P = 0.02$), have higher A1C values ($P = 0.02$), have higher diabetes-specific conflict reported by both the youth and parent ($P = 0.0002$), have higher levels of negative affect around lower blood glucose monitoring reported by the youth ($P = 0.02$), and have higher levels of diabetes-specific burden reported by the parent ($P =0.003$) (27).

Rikos et al. (2022), did a cross-sectional study on Quality of Life and Psychological Burden of Parents of Children, Adolescents, and Young Adults with T1DM (14). Parent Diabetes Distress Scale, and psychological burden was measured using the Spielberger State/Trait Anxiety Inventory (STAI). Data were gathered over a period of 2 months (16 April–16 June

2021) using a digital platform (Google Form) on Facebook, the websites of official Diabetes Associations, and the Hellenic Diabetes Federation's website. The mean score for state anxiety was greater than that for trait anxiety (49.8 vs. 48.0, p = 0.006), indicating that STAI scores are moderate to high. Higher number of hyperglycemic episodes (n = 0.25, p = 0.002), the fewest hypoglycemia episodes (n = 0.18, p = 0.024), and the most parental trait anxiety (n = 0.04, p 0.001) were associated with increased discomfort or a lower quality of life for the parents. Parents were discovered to be moderately to severely distressed and anxious (14).

**Indian Literature**

In a study by Kumar et al. (2020) , the mean Strength and Difficulties Questionnaire Parent Proxy scores was found to be 17.75 for total difficulties, 4.97 for emotional symptoms, 4.04 for conduct problems, 4.84 for hyperactivity-inattention symptoms, 3.65 for peer relationship problems and 5.96 for prosocial behaviors. WHO-5 (The World Health Organisation- Five Well-Being Index) indicated the presence of Poor well-being (score <13) in 17% of patients. 26% of the subjects were found to have low mood. Almost 50% of patients reported an adverse impact on the overall quality of life, as well as individual sub-domains of DAWN QoL scale (28).

Agrawal et al. (2019), studied 97 T1DM children among which there were 59 boys and 38 girls between 4 and 15 years of age with at least 6 months of illness (29). The childhood psychopathology measurement schedule (CPMS) scale was used. This cross-sectional study was conducted over a one-year period in the paediatrics department of tertiary care centre. The prevalence of conduct disorder (24.5%) was highest in the study population (more than normal individual factor score), followed in descending order by special symptoms (pica, enuresis, thumb sucking, etc.) (24%), physical illness (23%), anxiety (10%), and depression (7%) from the various types of individual psychosocial problems seen as eight subcomponents/factors of the CPMS questionnaire. The number of hyperglycaemic episodes, the number of hospitalizations in the previous six months, and the HbA1c value all strongly positively correlated with the CPMS score. HbA1c over the previous six months and the overall number of hospitalizations were both highly reliable independent predictors of psychosocial issues (29).

In a cross-sectional study by Khandelwal et al.(2016), a comparison group of 100 non-diabetic children and 84 children (6–14 years old) with T1DM were included(30).The DSM-5 parent/guardian-rated Level 1 and 2 Cross-Cutting Symptom Measure -Child age 6 to 17 was used to evaluate the particular domains and severity of psychosocial illness. HbA1c levels were assessed, and sociodemographic factors were examined.84 subjects it was found that 55.95% of the subjects had at least one psychosocial disease while prevalence was only 20% in non-diabetics, the difference being highly significant ($p<0.0001$). The mean HbA1c (8.71±1.0) in children having psychosocial illness was significantly higher than mean HbA1c (7.90±0.98) in those without psychological illness ($p<0.001$) (30).

In a study conducted by Puri et al. (2013), quality of life (QoL), emotional well-being, behavioural, and cognitive profile of children/adolescents with T1DM with at least 6 months duration of illness were assessed. It was found that nearly 33.3% children between 6-18 years with type 1 diabetes mellitus had a significant adverse effect on quality of life due to their illness. Amongst the subdomains of QoL, adverse impact was related to symptoms of diabetes and perception of health was reported the most, while the impact on activities was the least reported. Child behavioural checklist questionnaire detected possible behavioural problems in 25.6% of the children. Abnormal internalizing behaviours were more common than externalizing behaviors. WHO-5 well-being index showed 21.3% of the subjects had low mood (31).

# AIMS AND OBJECTIVES

**Aim**

To assess the emotional and behavioural problems in children and adolescents with Type 1 Diabetes Mellitus.

**Objectives**

*Primary:*

1. To assess the emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus and healthy controls
2. To compare the emotional and behavioural problems in children and adolescents having type-1 Diabetes Mellitus with healthy controls.

*Secondary:*

1. To assess the association of emotional and behavioural problems in children having type 1 Diabetes Mellitus with glycemic sociodemographic and clinical variables including HbA1c.

# MATERIALS AND METHODS

**Study setting**

Children and adolescents diagnosed with Type-1 Diabetes Mellitus was recruited for the study from the Department of Pediatrics of All India Institute of Medical Sciences, Jodhpur, Rajasthan

**Study design**

A cross sectional comparative study

**Study participants**

The Study consisted of two groups: Equal number of cases and controls was taken as study participants.

Cases: Children and adolescents diagnosed with Type 1 Diabetes Mellitus

Controls: Healthy age and gender matched children and adolescents

Inclusion and exclusion criteria for Cases:

Inclusion criteria:

1. Children and adolescents of age 6-18 years diagnosed with Type 1 Diabetes Mellitus for at least 6 months.
2. Stable patients on subcutaneous insulin and taking oral feeds.
3. Children and adolescents living with parent(s)/caregiver for more than 6 months.

Exclusion criteria:

1. Children and adolescents requiring emergency/ intensive care for altered sensorium/ respiratory distress/ hemodynamic instability. These children or adolescents may be included after stabilization.

Inclusion and exclusion criteria for Controls:

Inclusion criteria:

Age and gender matched controls from community setting.

Exclusion criteria:

Any serious, debilitating, medical, surgical illness, or psychiatric illness

**Sampling and sample size**

Convenience sampling was done. The data collection was done from 01/01/2021 to 30/6/2022 after approval from Institutional Ethics Committee. All children diagnosed with Type 1 Diabetes Mellitus in department of Pediatrics, meeting the inclusion criteria was enrolled as study subjects after consent from parents and assent of subjects ≥ 12 years

**Study duration**

After obtaining Ethical approval from Institutional Ethics Committee (Certificate number: AIIMS/IEC/2021/3355) the study was conducted from 01/01/2021 to 30/06/2022.

**Data tools**

*Clinical profile sheet* – Socio-demographic and clinical information will be recorded on semi-structured proforma.

*Child Behaviour Checklist* (CBCL, 6-18years) – It is a standardized scale having 120 items that covers 8 syndrome scales: anxious, depressed, somatic complaints, social problems, thought problems, attention problems, rule breaking behaviour and aggressive behaviour. It is to be completed by parent/caregiver. The time taken to complete the scale is 20- 30 minutes. Response format is 3 points Likert type scale – 0: not true, 1: somewhat or sometimes true, 2: very true or often true and fill in the blank. The summation of anxious, withdrawan, somatic complaints gives a score for internalizing problems, summation of rule breaking, aggressive behaviour gives score for externalizing problems, and sum of all including social, thought, attention problems gives total problems score. The scale has good validity and reliability. The Pearson value for Test-Retest reliability is 0.88. The Cronbach's alpha for internal consistency is 0.8. The sensitivity rate score is 0.92 and specificity rate is 0.82(32).

CBCL 6-18 English version was bought with budget procured from the Postgraduate thesis grant of Rs 27,000. CBCL scales were translated into Hindi by the WHO method of forward and backward translation of scales

*Strength and Difficulties Questionnaire (SDQ)*- It is a screening questionnaire for children and young people. There are 30 items in the questionnaire comprising 5 subscales(33). The parent and teacher Strength and Difficulties Questionnaire can be completed by a parent or teacher. The average time taken to complete is about 10 minutes. The subscales include emotional problems, conduct problems, hyperactivity/inattention, peer relationship problems, prosocial behaviour scoring. Summation of emotional problems and peer problems give internalizing score and conduct score with hyperactivity score gives externalizing score. Total score is the sum of all these. The scale has strong internal consistency and test-retest reliability. It also shows good concurrent validity(34).

English and Hindi version of SDQ scale were freely available and used after obtaining permission from the concerned

*Biochemical investigations*

Blood investigations was done to measure HbA1c for assessing metabolic glucose control.

**Data collection**

Cases:

1. Patients when meeting the selection criteria, the patient and his/her parents was explained about the objectives and methodology of the study, and written consent or assent was taken.
2. Sociodemographic data and clinical details were recorded.
3. The caregiver rated the Child Behaviour Checklist and Strength and Difficulties Questionnaire for assessment of emotional and behavioural problems in the child. For children and adolescents who screen positive (CBCL total T score > 60 or with clinical information) for different emotional and behavioural problems, detailed clinical interview was done for clinical diagnosis.
4. Blood sample taken for biochemical investigations for assessing glycemic control (part of routine investigations in paediatric OPD).

Controls:

1. Apparently healthy children and adolescents meeting the criteria taken as controls
2. Sociodemographic and clinical details was filled.
3. Child behavior checklist and Strength and Difficulties questionnaire was rated by caregiver. Any child or adolescent screened positive, was managed in Department of Psychiatry with appropriate liaison with treating team.

**Ethical consideration**

Children and adolescents who are detected with emotional and behavioural problems were further managed in Department of Psychiatry with appropriate liaison with treating team.

**Statistical Analysis**

Data analyses were performed using SPSS version 25 (IBM Corp., Chicago,IL, USA). Descriptive statistics are presented using mean, standard deviation, range,percentage, $25^{th}$ and $50^{th}$ percentile, whichever are appropriate. Assessment of emotional and behavioural problems was determined by calculating the frequency of all domains of the scale in both the cases and controls. Mann U Whitney test was applied to find the significant difference between the variables of the two groups. The normality of data was assessed using the Shapiro–Wilk test. CBCL and SDQ scores were continuous variables. To determine the relationship between a categorical variable and continuous variable Mann U Whitney test was used as the data was not normally distributed (eg. Age groups, gender, birth order, locality area, socioeconomic status, family type, temperament, comorbidities, diet plan, peer adjustment, treatment modality, screen time, etc). Correlation analysis has been done to look for an association between two continuous variables for which Spearman's coefficient has been used in view of non-normal data (eg. HbA1c values, total duration of illness, age of onset of T1DM). A $p$-value $< 0.05$ was considered statistically significant.

# RESULTS

**Descriptive statistics**

A total of 62 cases and 63 healthy controls took part in the study. The socio-demographic and clinical data were collected, and scores on Child and behavioural checklist (CBCL), Strength and Difficulties Questionnaire (SDQ) were collected.

**Socio-demographic profile of cases**

**Age**

The mean age of cases was 11.4 years with a maximum age of 17 years and a minimum age of 6 years. The maximum number of participants was in the age group 10-12 years. (Figure 1).

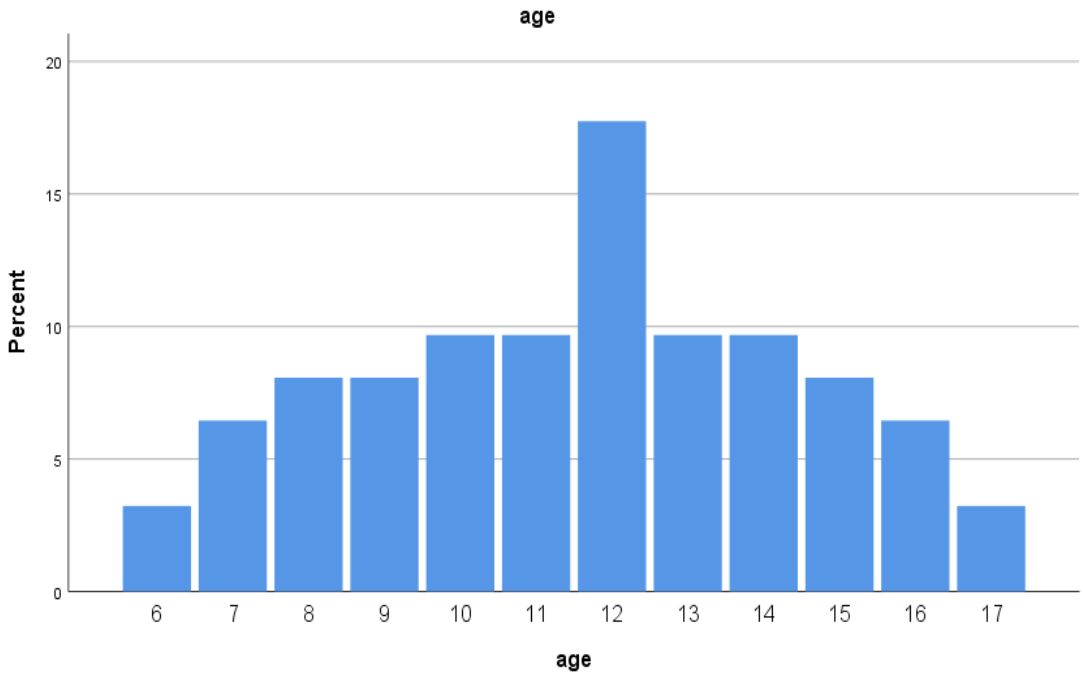


**Figure 1:** Age group of cases

**Birth order and Gender**

Out of all the participants, majority of the cases were of 1st in birth order (48.4%). The number of male cases were 30 (48.4%) and female cases were 32(51.6%).

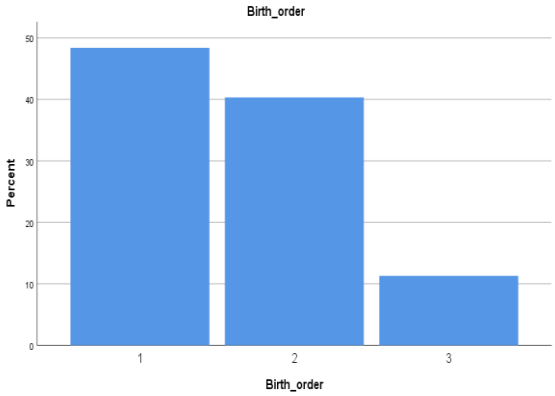


**Figure 2:** Birth order

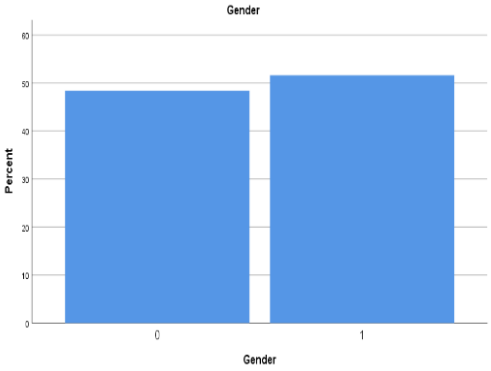


**Figure 3:** Gender

## Educational Status

Majority of the cases were studying in primary and middle school (35.5% and 33.9%). One of the participants had discontinued after primary school due to illness and one had never attended school. Mean of education in years is 6.55 ± 3.04 years.

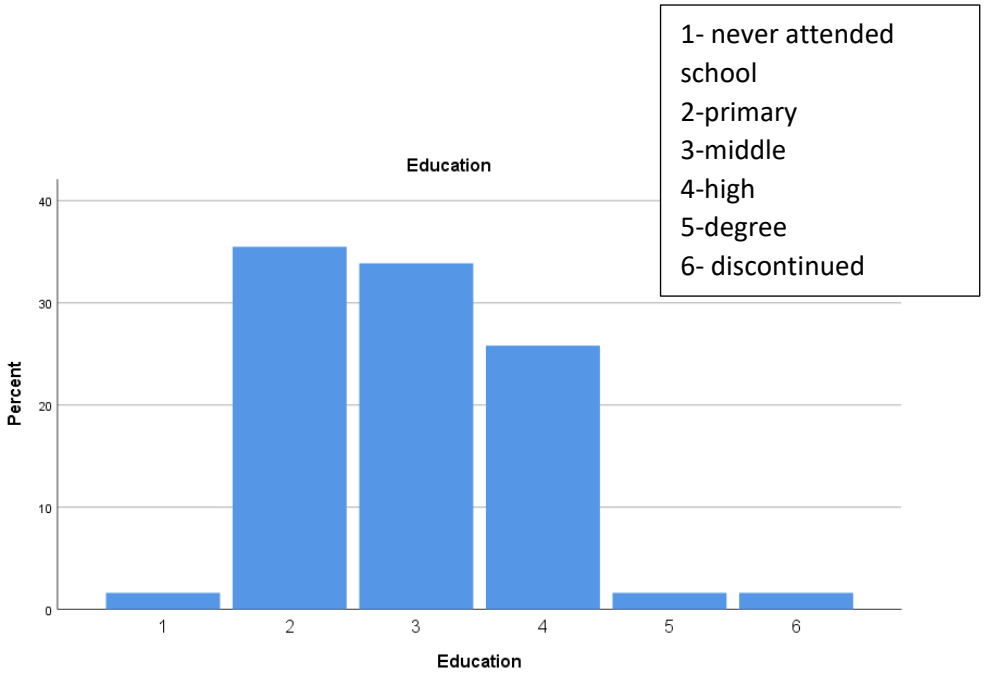


**Figure 4:** Education

## Type of family, Socioeconomic status & Religion

Majority of the cases came from rural background (69.4%) and belonged to joint family (58.1%).Highest number of cases belonged to Lower middle socioeconomic status (35.5%) followed by upper lower (24.2%),upper middle (17.7%), upper (12.9%), Lower (9.7%) socioeconomic status, classified according to Modified Kuppuswamy scale,2021 (35). For

analysis purpose we have combined lower and upper lower into lower SES, lower and upper middle SES to middle SES. Upper SES was kept the same. Thus, majority belonged to middle SES (53.2%). Hinduism was being followed by majority of cases (95.2%)

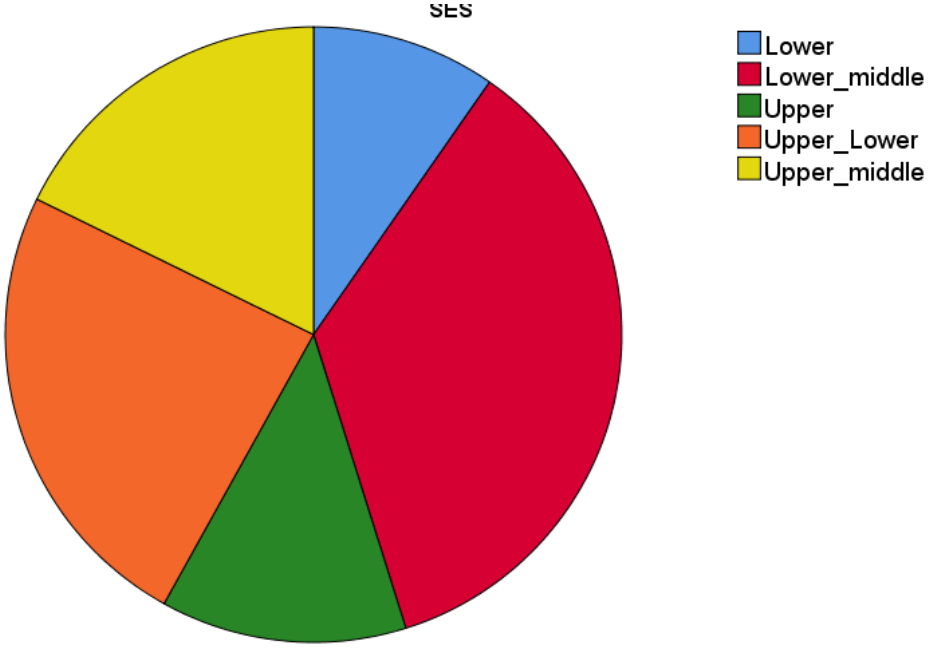


**Figure 5** : Socioeconomic status

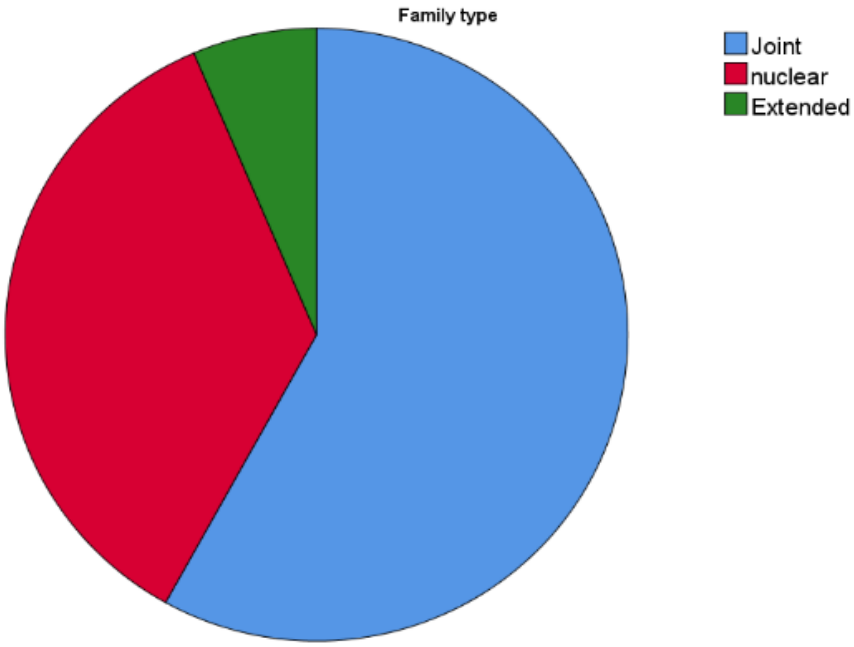


**Figure 6**: Family type

## Family Characteristics

Mean age of parents of the cases were father's age being 29.2 ± 4.89 years and mother's age 24.48 ±3.81years. Majority of the fathers' education status was those studied up to high school (41.9%) and mothers were illiterate 25.8% followed by those who studied upto high school (22.6%). Father's occupation of maximum number of the cases was semi-skilled workers (25.8%) followed by skilled workers (farmers-21%, shopkeepers-14.5%). Majority of the mothers were housewives (96.8%). The per capita median income was Rs 15,000 per month. The mean of time gap between marriage and child birth was 4.53 ± 2.6years.

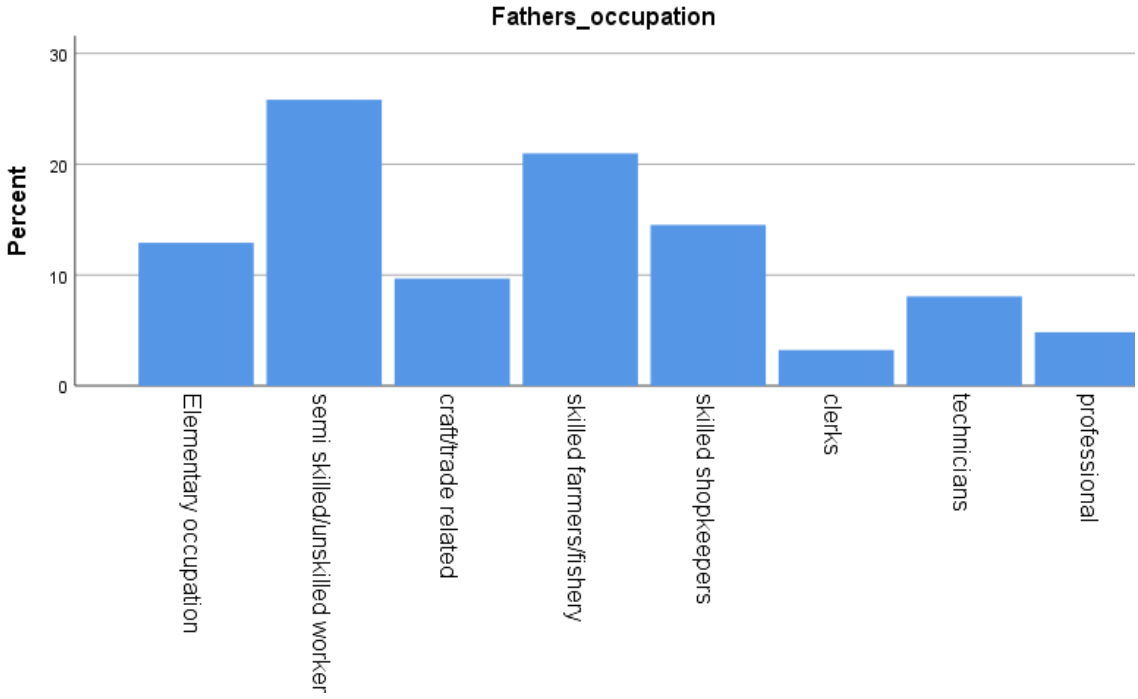


**Figure 7**: Father's occupation

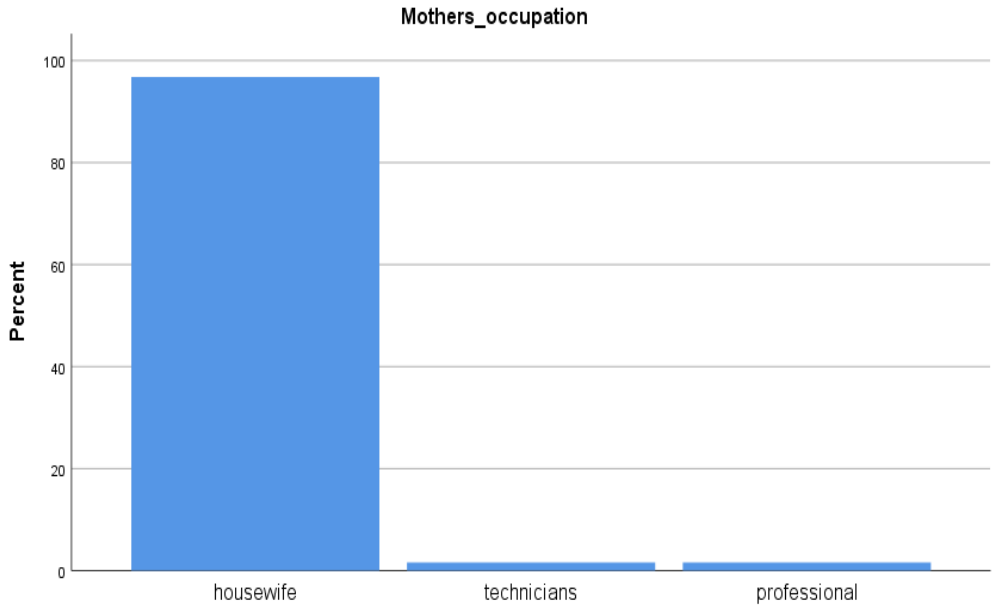


**Figure 8**: Mother's occupation

In 50% of the cases, information/rating of scales was done by the respondent's father, followed mother (37.1%) and anyone else living with the child or adolescent. For two of the cases information was given by a close relative but not staying with the child/adolescent.

**Table 1**: Socio demographics of cases

| **Variables** | | **Frequency (N=62)** | **Percent** |
|---|---|---|---|
| | | | |
| **Gender** | Male | 30 | 48.4 |
| | Female | 32 | 51.6 |
| **Birth order** | | | |
| | 1st | 30 | 48.38 |
| | 2nd | 25 | 40.3 |
| | 3rd | 7 | 11.29 |
| **Education** | | | |
| | Never attended school | 1 | 1.6 |
| | Primary | 22 | 35.4 |
| | Middle | 21 | 33.8 |
| | Highschool | 16 | 25.8 |
| | Degree | 1 | 1.61 |
| | Discontinued | 1 | 1.61 |
| **Religion** | | | |
| | Hindu | 59 | 95.2 |
| | Islam | 3 | 4.8 |
| **SES** | | | |
| | Lower | 6 | 9.7 |
| | Upper Lower | 15 | 24.2 |
| | Lower middle | 22 | 35.5 |
| | Upper middle | 11 | 17.7 |
| | Upper | 8 | 12.9 |
| **Family type** | | | |
| | Joint | 36 | 58.1 |
| | Nuclear | 22 | 35.5 |
| | Extended | 4 | 6.5 |
| **Residence** | | | |
| | Rural | 43 | 69.4 |
| | Urban | 19 | 30.6 |

**Personal profile of cases**

**Temperament:**

Maximum cases enrolled had an easy temperament (72.6%) followed by slow to warm up (19.4%) and difficult (8.1%) temperament (Table 2).

**Screen time & Physical activity**

Screen time for majority of the cases was 2-4per day (67.7%), less than 2 hours per day for 17.7% of cases, more than 4 hours a day for 14.5% of the cases. Majority of the cases had physical activity for less than 1 hour/day

**Past history of psychiatric illness**

None of the cases had a past history of clinically diagnosed psychiatric illness

**Table 2:** Personal history of cases

| **Variables** | | **Frequency** | **Percent** |
|---|---|---|---|
| | | | |
| **Temperament** | Easy | 45 | 88.70 |
| | Slow to warm up | 12 | 19.40 |
| | Difficult | 6 | 7.93 |
| | | | |
| **Physical activity** | < 1 hour | 38 | 61.30 |
| | >1 hour | 24 | 38.7 |
| | | | |
| **Screen Time** | < 2hours | 11 | 17.7 |
| | 2-4 hours | 42 | 67.7 |
| | > 4 hours | 10 | 15.8 |
| | | | |
| **Peer adjustment** | Adequate | 57 | 91.9 |
| | Inadequate | 6 | 7.93 |

**Clinical Profile**

**Diagnosis of T1DM**

The mean of age of cases at the time of diagnosis of T1DM was 9.94 ± 2.9 years of age. Total Duration of T1DM of the study population had a mean (SD) of 19.6 ±14.72 months.

**Comorbidities**

Common comorbidities in Type 1 DM like celiac disease and thyroid disease was noted. About 14.5% of the cases had celiac disease and 12.9% had thyroid disease.

**Knowledge regarding illness**

We subjectively assessed the child's knowledge about diabetes mellitus and its management. It was adequate for 83.9% of the cases.

**Treatment modality**

Treatment modality (insulin regimen) followed by the cases were recorded. About 71 % of the cases was on basal bolus regime of insulin management, and others on split mix regimen (Table 3).

**Biochemical Investigation**.

HbA1c was measured as a routine investigation which measured the glycaemic control. The mean value of HbA1c of the study population was 9.93± 2.04%.

**Table 3 :** Clinical Profile of cases

| **Variables** | | **Frequency** | **Percentage** |
|---|---|---|---|
| | | | |
| **Comorbidities** | Celiac disease | 10 | 15.8 |
| | Thyroid disease | 8 | 12.9 |
| | | | |
| **Insulin Regime** | Split mix | 19 | 30.1 |
| | Basal bolus | 44 | 69.8 |
| | | | |
| **Diet Plan** | Following | 55 | 87.3 |
| | Not following | 8 | 12.6 |
| | | | |
| **Knowledge regarding illness** | Adequate | 48 | 76.1 |
| | Inadequate | 15 | 23.8 |

**Sociodemographic of controls (N=63)**

The mean age of controls was 11.58 ± 2.88. Median per capita income was Rs 20,000/month.

Table 4, shows the Socio demographics of the age and gender matched healthy controls enrolled in the study.

**Table 4:** Socio demographic profile of controls

| **Variables** | | **Frequency (N=63)** | **Percent** |
|---|---|---|---|
| **Gender** | Male | 30 | 47.62 |
| | Female | 33 | 52.38 |
| **Birth order** | 1st | 19 | 30.16 |
| | 2nd | 23 | 36.51 |
| | 3rd | 21 | 33.33 |
| **Education** | | | |
| | KG/preschool | 2 | 3.17 |
| | Primary | 20 | 31.75 |
| | Middle | 25 | 39.68 |
| | Highschool | 16 | 25.40 |
| **Religion** | | | |
| | Hindu | 55 | 87.30 |
| | Islam | 5 | 7.94 |
| | Others | 3 | 4.76 |
| **SES** | Lower | 5 | 7.94 |
| | Upper Lower | 9 | 14.2 |
| | Lower middle | 30 | 47.61 |
| | Upper middle | 14 | 22.2 |
| | Upper | 5 | 7.94 |
| | | | |
| **Residence** | Urban | 45 | 71.43 |
| | Rural | 18 | 28.57 |
| | | | |
| **Family type** | Joint | 20 | 31.75 |
| | Nuclear | 43 | 68.25 |

**Personal Profile of controls**

Majority of the controls had an easy temperament (79.3%) and good peer adjustment (93.6%). The screen time was less than 2 hours in 39.68% of the controls and physical activity for more than 1 hour in 69.8% of the controls (Table 5).

**Table 5:** Personal history of controls

| **Variables** | | **Frequency (N=63)** | **Percent** |
|---|---|---|---|
| **Temperament** | Easy | 50 | 79.37 |
| | Slow to warm up | 11 | 17.46 |
| | Difficult | 2 | 3.17 |
| | | | |
| **Physical activity** | < 1 hour | 19 | 30.16 |
| | >1 hour | 44 | 69.84 |
| | | | |
| **Screen Time/day** | <2hours | 25 | 39.68 |
| | 2-4 hours | 20 | 31.74 |
| | >4 hours | 18 | 28.58 |
| | | | |
| **Peer adjustment** | Adequate | 59 | 93.65 |
| | Inadequate | 4 | 6.35 |

**Assessment of emotional and behavioural problems in cases vs controls**:

For assessing the emotional and behavioural problems in subjects, any problems rated by parent/caregiver in each subdomain were taken into account. The summation of these scores were included to find the frequency of each domain in CBCL and then Internalizing, Externalizing & Total problem scores.

Frequency (n) = (Number of participants who had any problem÷ Number of participants in the sample) x 100. In the CBCL scale anxious/depressed domain had the highest frequency (33.9%) followed by withdrawn/depressed, social problems, thought problems, aggressive behaviour and the least being attention problems and rule breaking behaviour (Table 6). In SDQ scale, highest frequency was for emotional problems followed by peer problems,

conduct problems and least being hyperactivity (Table 7). Overall internalizing problems were higher than externalizing as per both the scales.

**Table 6:** Frequency of problems assessed in cases by CBCL scale

| **CBCL domain** | **Present N (%)** | **Absent N (%)** |
|---|---|---|
| Anxious/ depressed | 21 (33.9%) | 41 (66.1%) |
| Withdrawn /Depressed | 16 (25.8%) | 46 (74.2%) |
| Somatic Complaints | 5 (8.1) | 57(91.9%) |
| Social Problems | 13 (21.0%) | 49 (79.0%) |
| Thought Problems | 13(21.0%) | 49 (79.0%) |
| Attention Problems | 7(11.3%) | 55 (88.7%) |
| Rule-Breaking Behaviour | 7 (11.3%) | 55 (88.7%) |
| Aggressive Behaviour | 13(21.0%) | 49(79.0%) |
| Other problems | 17(27.4%) | 45(72.6%) |
| ***Internalizing Problem*** | 23 (37.1%) | 39(62.9%) |
| ***Externalizing Problem*** | 16(25.8%) | 46(74.2%) |
| (Scale 4,5,6)<br>Other problems | 24(38.7%) | 38(61.3%) |
| ***Total Problem Behaviour*** | 37(59.7%) | 25(40.3%) |

**Table 7:** Frequency of problems assessed in cases by SDQ

| **SDQ domain** | **Present N (%)** | **Absent N (%)** |
|---|---|---|
| Conduct | 9(14.3%) | 53(84.1%) |
| Hyperactivity | 4(6.3%) | 59(93.7%) |
| Emotional problems | 19(30.2%) | 44(69.8%) |
| Peer problems | 15(23.8%) | 48(76.2%) |
| ***Internalizing*** | 26(41.3%) | 37(58.7%) |
| ***Externalizing*** | 12(19.0%) | 51 (81%) |
| ***Total SDQ*** | 30(47.6%) | 33(52.4%) |

**Controls**

Similarly, the emotional and behavioural problems of the controls recruited was scored in CBCL and SDQ scale, and frequency in all domains was recorded in the following tables 8 and 9 below.

**Table 8:** Frequency of problems assessed in controls by CBCL scale

| **CBCL domain** | **Present N (%)** | **Absent N (%)** |
|---|---|---|
| Anxious/ depressed | 15 (23.8%) | 48 (76.2%) |
| Withdrawn /Depressed | 3(4.8%) | 60 (95.2%) |
| Somatic Complaints | 1 (1.6) | 62(98.4%) |
| Social Problems | 7 (11.1%) | 56(88.9%) |
| Thought Problems | 0(0%) | 63(100.0%) |
| Attention Problems | 4(6.3%) | 59 (93.7%) |
| Rule-Breaking Behaviour | 3(4.8%) | 60(95.2%) |
| Aggressive Behaviour | 4(6.3%) | 59(93.7%) |
| ***Internalizing Problem*** | 15(23.8%) | 48(76.2%) |
| ***Externalizing Problem*** | 4(6.3%) | 59(93.7%) |
| ***Total Problem Behaviour*** | 26(41.3%) | 37(58.7%) |

**Table 9:** Frequency of problems assessed in controls by SDQ scale

| **SDQ domain** | **Present N (%)** | **Absent N (%)** |
|---|---|---|
| Conduct | 4 (6.45%) | 58 (93.55%) |
| Hyperactivity | 2 (3.23%) | 60 (96.77%) |
| Emotional problems | 14 (22.58%) | 48 (77.42%) |
| Peer problems | 5 (8.06%) | 57 (91.94%) |
| ***Internalizing*** | 18 (29.03%) | 44 (70.97%) |
| ***Externalizing*** | 4 (6.45%) | 58 (93.55%) |
| ***Total SDQ*** | 21 (33.87%) | 41 (66.13%) |

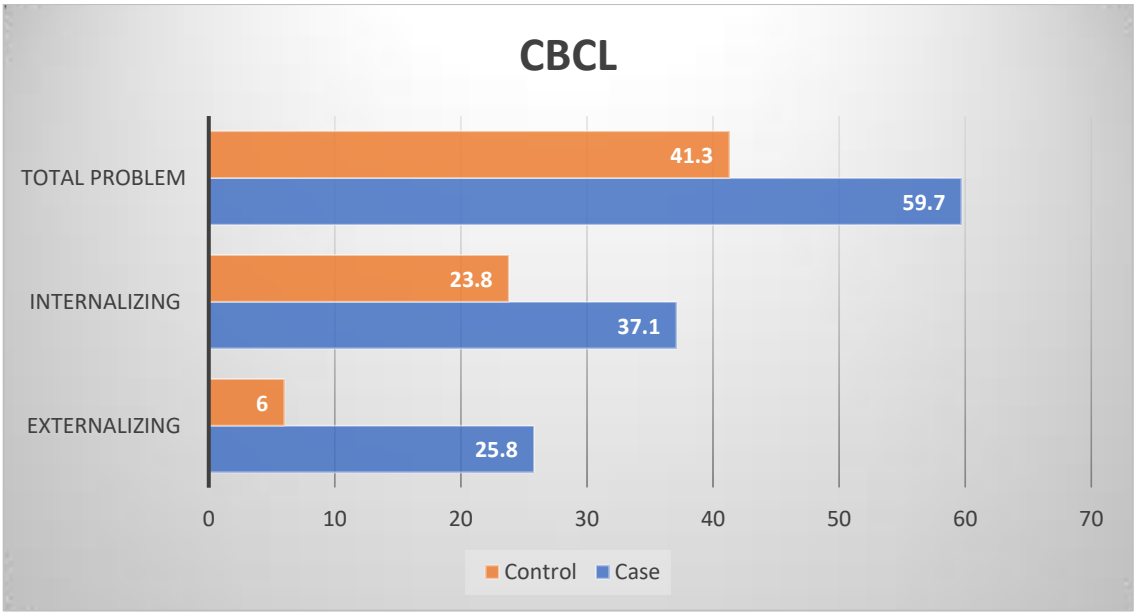


**Figure 9: Comparison of percentage of cases vs controls on CBCL scores**

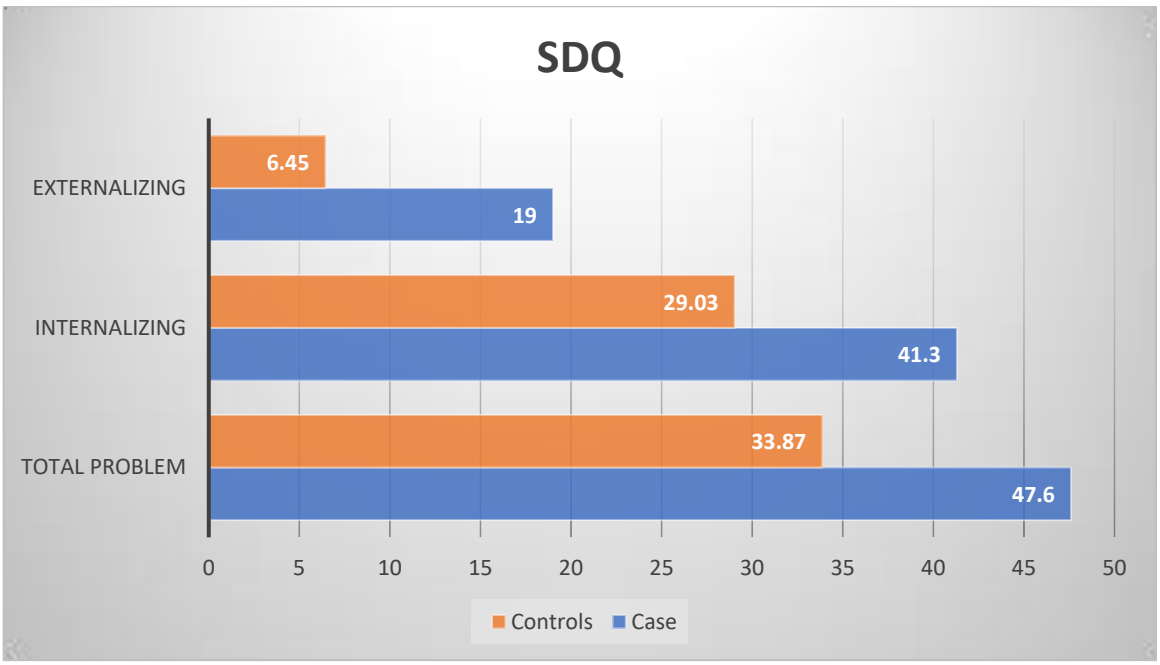


**Figure 10: Comparison of percentage of cases vs controls on SDQ scores**

**Scores of cases in CBCL scale**

CBCL scores were not normally distributed as checked by Shapiro Wilk test ($p<0.001$) . Table 10, shows the summary of scores in CBCL scale of the cases. It includes internalizing, externalizing problems scores and total problems.

**Table 10 :** CBCL scores of Cases

| CBCL | Mean±SD | Median (IQR) | Range (maximum-minimum) |
|---|---|---|---|
| Externalizing Problems | 1.03±2.35 | 0.00 (1) | 11(0-11) |
| Internalizing Problems | 1.39±2.62 | 0.00 (2) | 15(0-15) |
| Total score | 3.60±4.89 | 2.50 (2.5) | 29(0-29) |

**Scores of cases in SDQ scale**

SDQ scores were also not normally distributed. Table 11,shows summary of SDQ scale scores used in cases. It included internalizing, externalizing problems and total SDQ scores

**Table 11:** SDQ scores of cases

| SDQ | Mean±SD | Median (IQR) | Range (maximum-minimum) |
|---|---|---|---|
| Externalizing Problems | 0.39±0.89 | 0.00(0) | 4(0-4) |
| Internalizing Problems | 1.16±1.83 | 0.00(2) | 10(0-10) |
| Total score | 1.55±2.22 | 0.00(3) | 29(0-29) |

CBCL scale scores of controls

Table 12, shows the CBCL scale scores used in cases, where the median (IQR) of total problems score was 2.00 (5). It also included internalizing, externalizing problems scores.

**Table 12 : CBCL scores of Controls**

| CBCL | Mean±SD | Median (IQR) | Range (maximum-minimum) |
|---|---|---|---|
| Externalizing Problems | 0.21±0.91 | 0.00 (0) | 6(0-6) |
| Internalizing | 0.43±0.91 | 0.00 (0) | 4(0-4) |
| Total score | 1.10±1.78 | 0.00 (2) | 7(0-7) |

Summary of SDQ scale scores used in controls

Table 13, shows SDQ scale scores used in controls. It included internalizing,externalizing problems and total SDQ scores

**Table 13: SDQ scores of Controls**

| SDQ | Mean±SD | Median (IQR) | Range (maximum-minimum) |
|---|---|---|---|
| Externalizing Problems | 0.16±0.63 | 0.00 (0) | 3(0-3) |
| Internalizing Problems | 0.43±0.77 | 0.00 (1) | 3(0-3) |
| Total score | 0.59±0.96 | 0.00 (1) | 3(0-3) |

Although the cases had significantly higher problems than controls**,** none of the cases had a total CBCL score above the 97$^{th}$ percentile, which is the clinical range that needed immediate intervention. All the cases lied in the subclinical range (borderline to normal range) not resulting in a syndromic diagnosis. Similarly, SDQ scores were also taken as a continuous variable without any categorization.

**Inferential Statistics**

As shown in the table 14, Mann U Whitney test was performed to look for difference between the case and control groups on the internalizing, externalizing and total problem scores in the CBCL scale. A significant difference was obtained between them with higher score in cases than controls.

**Table 14**: Comparison of cases vs controls based on CBCL scores

| CBCL | Mean Rank | | U Value | P value (2 tailed) |
|---|---|---|---|---|
| | Cases | Controls | | |
| Internalizing problems score | 68.6 | 57.4 | 206 | **0.035** |
| Externalizing problems score | 69 | 56 | 157 | **.003** |
| Total problems score | 73 | 52 | 131 | **.001** |

**U** = Mann–Whitney U value**, *p*-value** = Level of significance

Table 15, Mann U Whitney test was performed to look for difference between the case and control group on the externalizing and total problem scores in the SDQ scale. A significant difference was obtained between them expect internalizing scores.

**Table 15**: Comparison of cases vs controls based on SDQ scores

| SDQ | Mean Rank | | U Value | P value (2 tailed) |
|---|---|---|---|---|
| | Cases | Controls | | |
| Internalizing problems | 60.6 | 65.3 | 180 | 0.333 |
| Externalizing Problems | 74.1 | 52 | 126 | **.000** |
| Total problems | 70.0 | 56.03 | 154 | **.015** |

**U** = Mann–Whitney U value**, *p*-value** = Level of significance

**Comparison between Total Problems score in CBCL scale and socio demographics of cases**

Table 16, shows independent samples Mann Whitney test done to find no significant difference between two categories of gender, place of residence, family type and total problem score in CBCL as continuous variables. Age of the participants has been categorized into children (6-10 years) and adolescents (11-18 years) to look for association of certain age

groups with CBCL scores. Table 17 show comparison between Total Problems score in CBCL scale and birth order, SES

**Table 16** : Comparison between Total Problems score in CBCL scale and sociodemographics

| Variable | Mean rank | U Value | P value |
|---|---|---|---|
| **Current Age** | | | |
| Child (6-10y) | 22 | 420 | 0.760 |
| Adolescent(11-18y) | 40 | | |
| **Gender** | | | |
| Male | 32.95 | 436.5 | 0.52 |
| Female | 30.14 | | |
| **Residence** | | | |
| Urban | 35.87 | 325.5 | 0.19 |
| Rural | 29.57 | | |
| **Family Type** | | | |
| Joint | 27.51 | 324.5 | 0.23 |
| Nuclear | 32.75 | | |

**U** = Mann–Whitney U value**, *p*-value** = Level of significance

**Table 17 :** Comparison between Total Problems score in CBCL scale and birth order, SES

| Variable | Mean Rank | H value | P value | Degree of freedom |
|---|---|---|---|---|
| **Birth Order** | | | | |
| 1st | 32.42 | 2.23 | 0.33 | 2 |
| 2nd | 32.98 | | | |
| 3rd | 22.29 | | | |
| **SES** | | | | |
| Upper | 43.81 | 4.59 | 0.100 | 2 |
| Middle | 29.77 | | | |
| Lower | 29.52 | | | |

Kruskal Wallis test, **H**=test statistic, ***p*-value** = Level of significance

**2) Clinical Variables**

**Association of total CBCL scores with different clinical variables were assessed.** Table 18,shows significant association of presence of celiac disease with CBCL scores. Peer adjustment was assessed as per the information given by the parent/caregiver and after the interview with the subject. On analysis, it was found that those with inadequate peer adjustment was significantly higher difference in CBCL scores than those have adequate peer adjustment. There was no significant difference in other clinical variables with the scores.

**Table 18** : Comparison between total CBCL scores and clinical variables of cases

| Variable | Mean rank | U Value | P value |
|---|---|---|---|
| **Celiac disease** | | | |
| Present (N=9) | 42.67 | 138 | **0.037** |
| Absent | 32.67 | | |
| **Thyroid disease** | | | |
| Present (N=8) | 30.42 | 157.5 | 0.20 |
| Absent | 38.81 | | |
| **Peer Adjustment** | | | |
| Inadequate | 52.70 | 36.50 | **.003** |
| Adequate | 29.64 | | |
| **Insulin Regime** | | | 0.132 |
| Split Mix | 29.91 | 105 | |
| Basal bolus | 41.00 | | |
| **Diet Plan** | | | |
| Yes | 32.43 | 141 | 0.24 |
| No | 24.21 | | |

**U** = Mann–Whitney U value**, *p*-value** = Level of significance

Kruskal Wallis test was performed which showed significant association of temperament and the CBCL Scores as shown by Kruskal Wallis test. There is also significant association between screen time with SDQ total scores.( Table 19,20)

**Table 19** : Comparison between total CBCL scores and temperament of cases

| CBCL | Mean rank | H value | P value |
|---|---|---|---|
| **Temperament** | | | |
| Easy | 26.16 | **15.74** | **0.000** |
| Slow to warm up | 47.08 | | |
| Difficult | 42.20 | | |

Kruskal Wallis test, **H**=test statistic, ***p*-value** = Level of significance

**Table 20** : Comparison between total SDQ scores and screen time/day in cases

| SDQ | Mean rank | H value | P value |
|---|---|---|---|
| **Screen Time** | | | |
| <2 hrs | 45.50 | **10.64** | **0.005** |
| 2-4hrs | 27.26 | | |
| >4hrs | 34.17 | | |

Kruskal Wallis test, **H**=test statistic, ***p*-value** = Level of significance

CBCL and SDQ scores didn't have a significant association with other categorical clinical variables like duration of physical activity and frequency of blood sugar monitoring assessed in the proforma.

Table 21, shows the Spearman correlation matrix of CBCL and SDQ scores and continuous variables. There was no significant correlation of age of diagnosis of T1DM, Total duration of illness, HbA1c and current age of study participants with total scores of CBCL and SDQ. There is significant correlation of age of the participants and externalization problems in CBCL scores. With increase in age there is increase in the externalizing problems in the cases.

**Table 21**: Spearman correlation matrix of CBCL and SDQ scores and continuous variables.

| | **CBCL** | | | **SDQ** | | |
|---|---|---|---|---|---|---|
| | **External-izing** | **Internal-izing** | **Total** | **External -izing** | **Internal -izing** | **Total** |
| **Age of onset** | 0.222 | -0.219 | -0.019 | 0.037 | -0.072 | -0.066 |
| P value | 0.083 | 0.087 | 0.882 | 0.77 | 0.143 | 0.611 |
| **Duration of illness** | 0.196 | -0.067 | 0.009 | 0.145 | 0.020 | 0.123 |
| P value | 0.127 | 0.605 | 0.944 | 0.262 | 0.876 | 0.340 |
| **HbA1c** | 0.100 | 0.070 | 0.131 | 0.006 | 0.102 | .086 |
| P value | 0.441 | 0.588 | 0.311 | 0.962 | 0.432 | .506 |
| **Age (years)** | **0.263** | -0.225 | -0.007 | 0.076 | -0.106 | -0.047 |
| P value | **0.036** | 0.079 | 0.955 | 0.556 | 0.412 | 0.702 |

# DISCUSSION

The purpose of this study is to assess the emotional, and behavioural problems in children and adolescents with Type 1 Diabetes Mellitus and to assess the relationship with socio-demographics and clinical variables

**Prevalence of emotional and behavioural problems in type 1 Diabetes Mellitus.**

Our study is one of the few Indian studies on children with T1DM assessing the psychological issues faced by them. In the CBCL scale, it was found that 59.7% had problem behaviors which included 37.1% of the cases with internalizing problems,25.8% with externalizing problems and 38.7% had problem behaviour in other areas. Total difficulties score in SDQ scale was higher in 47.6% of the total subjects. The difference was significantly different with the healthy controls with a lower prevalence of behavioural problems and total difficulties bases on both the scales. The overall total scores didn't amount to the clinical range that needed immediate clinical attention. In a study by Khandelwal et al. (2016), that 55.95% of the subjects had at least one psychosocial disease while prevalence was only 20% in non-diabetics.DSM-5 was used to measure psychosocial illness. Irritation was most common psychosocial abnormality (38.1%), followed by depression (36.9%) and anxiety (32.1%)(30).In a study conducted by Puri et al. (2013) in a tertiary care institute in Delhi, used the CBCL scale in children between 6-18 years detected possible behavioural problems in 25.6% of the children among which internalizing behaviours were more common(31).This was similar to our findings where internalizing behaviour was greater than externalizing. Agrawal et al. (2015), in Northern India found 20% prevalence of psychosocial problems in children between 4 to 15 years. The most common was conduct disorder(24.5%)(29).In a study by Kumar et al.(2020) , mean of total difficulties in SDQ scale was 17.75 (0.8), and around one third of the subjects had significant decline in the quality of life due to the T1DM.Poor well-being was indicated in WHO-5 well-being index in 17% of patients (28).

The frequency of the problems in our study was found to be on the higher range, compared to the above-mentioned Indian studies. This may be because our study was done during the COVID 19 pandemic. The children were confined to the homes almost throughout the day. The opportunity to develop peer relationships and involve in extracurricular activities was much less. This would add on to the psychosocial burden resulting in emotional and behavioural problems. Another reason could be that the caregivers have been staying with the children the whole time would have noticed even the minor behavioural issues in them

leading to overreporting of symptoms. As both the scales were parent/caregiver rated the risk of biases must be taken into consideration.

A study by Medise et al.(2020), assessed the psychological aspects in 40 adolescents with T1DM using SDQ scale (self rated) .15% of the subjects showed higher total difficulties scores (18).A study by Fritzen et al. (2021), of the 166 patients taken the prevalence of depression and anxiety was 20.5% and 40.4%, respectively(23).In a case control study by Kim et al. (2015), showed significantly higher scores in adolescents with T1DM than the healthy controls in terms of total problems, internalizing problems, externalizing problems, thought problems, rule-breaking behaviour, aggressive behaviour, and lower in terms of academic performance in the Korean version of Youth Self Rated scale. The mean scores of internalizing problems and externalizing problems were almost the same(21).In a cross-sectional study by Bernstein et al. (2015) where 150 patients aged 11 to 25 years with type 1 diabetes were screened for behavioural problems, more than a third became positive. Among which the majority of the cases had anxiety (21.3%), followed by eating disorders and depression(22) . According to Northam et al. (2005), in the longitudinal study of adolescent with type 1 diabetes, 37% of the adolescent met criteria for DSM IV psychiatric disorder. This as two to three times higher than the psychiatric disorder found in the community(16).

It was observed that though the overall prevalence of emotional and behavioural problems were higher in T1DM, the frequency was variable. Various studies have used different assessment methods due to the absence of specific research tools for measuring the psychological stressors in T1DM. The diversity of study population is also questionable. These may be few of the reasons for wide variation in the prevalence. A population-based study by Sivertsen et al. (2009) in Norway, covered adolescents of age group 16 to 19 years. 40 adolescents were screened for various mental health measures like depression, anxiety, obsessive-compulsive behaviours, hyperactivity, impulsivity, inattention, perfectionism, resilience, sleep problems and eating behaviour where no differences were found from their peers(17). This is not in accordance with our studies and many previous studies where mental health problems are high in T1DM subjects. This may due to the differences in the demographics and methodology of the study. Only the adolescents were included and the scales used were self-rated scales for verifying diagnosis of Diabetes and mental health. The sample size was comparatively small and generalizability was limited.

Although half of cases have some emotional and behavioural problems as assessed by the scales, the problems didn't lie in the clinical range and did not amount to a syndromic psychiatric diagnosis. Due to the COVID 19 pandemic, children have been in a situation unlike the usual where they regularly go out to school, have relationships with peers, have some amount physical activity and usually have a routine involving other people than the family members. Children and young adults were deprived of this but also had the opportunity to be in their homes under parental supervision. In our study those who had come for follow up in the OPD had proper maintenance of insulin diary and 88.7% of the cases were following the diet plan advised COVID 19 pandemic may have provided a unique atmosphere of dwelling where good social support and parental guidance was available to the children. Although it is not the usual scenario. Another possible reason could be the total duration of T1DM in participants. The median of duration of illness is 1 year 2 months, which is comparatively a shorter duration in a chronic illness. If subsyndromal symptoms of mental illness are left unattended it may progress to the clinical range over time.

**Socio demographic, clinical profile and Emotional & Behavioural problems**

The maximum number of the subjects in our study was in the adolescent age group. Majority of the studies done included adolescents with T1DM.Some studies also reported occurrence of psychological issues more in adolescent age groups (36–38)

In our study, 64.5 % of the cases were between 10-18 years and they exhibited more emotional and behavioural problems. But there was no significant difference in problem behaviour between the children and adolescent age groups. As many of the studies included only adolescents and young adults, there is no much evidence of vulnerable age groups. When considering the age of onset of T1DM, the results are mixed. Khandelwal et al. (2016) showed lesser psychological issues in children with diagnosis after 10 years of age(30). Puri et al.(2013) showed better quality of life in children with age of onset of T1DM less than 5 years(31).In our study also, where the age of onset was inversely correlated with the age of diagnosis of illness. But the result was not statistically significant. As the diagnosis is made at a later age they may find difficulty in changing their routine, feel different from their peers and other adjustment issues. At a younger age child may not have much understanding of the illness and thus the concerns and worries regarding the same will also be less. This differences in relation of age of onset or diagnosis of T1DM may be because this is not the

sole factor responsible for psychological issues. Familial support and child temperament and attitude will also affect the behaviour. In our study total duration of T1M didn't significantly affect the prevalence of emotional and behavioural problems. In our study, most of the children were in primary or middle school. As the subjects are mostly enrolled before the COVID 19 pandemic, children were continuing to attend online classes and stayed at home. With T1DM, frequent need of injections and glucose monitoring would have been a hindrance in attending school regularly. Online studies and studying from home helped them continue the studies without travelling to school. Children with slow to warm up and difficult temperament had higher scores showing significant emotional and behavioural problems in those groups. No research has been previously seen in specific to find the relation between temperament and psychological issues in T1DM. The deviant adolescent behaviours not amounting upto psychopathology/psychiatric diagnosis needs to be delineated for better management. Simple behavioural interventions and parent management training can make a significant change in the evolving personality of the child or adolescent. This could positively help them coping with chronic illness with time. Major proportion of the children and adolescents came from rural areas and belonged to middle socioeconomic status. These demographic factors did not have a significant association with higher problems in our study. Northam et al. found disruptive behviour in 12 -20% of the subjects belong to lower socioeconomic status(16). Puri et al. (2013), found positive association of lower SES with more withdrawn/depressed behaviours of CBCL scale. We did not assess individual domains of the scale, which a scope for further analysis.(31) Joint families are expected to reduce the family burden and reduce psychosocial stressor in the child. Many of the previous studies have not explored the association between these factors. Two Indian studies that assessed family settings, didn't find significant difference in the potential outcome of T1DM (30,31).The results of our study was similar with no association between type of family and emotional and behavioural problems.

About 14.5% of the total cases had celiac disease as a comorbidity. It was found that these patients had significantly higher difficulties and problems as seen in both SDQ And CBCL scales. Externalizing Behaviours were relatively higher among the other problems. This was like expected as having celiac disease would further put the burden on the child with restrictions in the diet pattern. They feel pressured to stick to a plan, unlike peers who would get to share any food among themselves. Not many studies have taken comorbidities into consideration for finding the relationship with behavioural issues except for Agrawal et al.

(2014), but didn't find any significant association in CPMS scale (29). In a study by Sud et al. (2012) done specifically in T1DM children with celiac disease and to analyse their Quality of life. T1DM children with celiac disease had little or no effect on their quality of life, however their parents did indicate greater anxiety about their child's social functioning (39).Our study showed peer adjustment being poor in adolescents with higher emotional and behavioural problems. This result was also reflected in a study by Duffus et al. where higher peer conflicts were noted in older adolescents(20). Since inadequate peer adjustment has significance and majority of the cases were in the adolescent age groups, were can infer that adolescence is an particular time that should be targeted upon. It is a recommended that the role of parents/caregivers should be increased in diabetic care during this period (40). We couldn't find any Indian studies which analysed this factor of peer relations which is an important predictor of psychiatric illness.

Due to the COVID 19 pandemic, the overall screen time had increased due to online classes and higher recreational use. In our study there was a significant difference between the cases with emotional and behavioural problems in SDQ scale having longer screen time (2-4 hours and > 4 hours). This is a unique finding in our study that has not been assessed in any previous literature.

**Glycaemic control and emotional & behavioural problems**

There are various studies comparing glycaemic control and psychological issues in T1DM. The results were inconsistent across the studies. Northam et al., Bryden et al., and Leonard BJ et al. gave the relation of behavioural problems with poor metabolic control(6),(41).Ohmann et al.(2009), reported significantly higher prevalence of somatic complaints and internalizing behaviors in children with relatively poor glycemic control(42).

In a study by Thiago et al. (2021),HbA1c was worse in the depressed, in the anxious patients and those with high levels of Brazilian Problem Areas In Diabetes Scale($p = 0.009$)(43). Bernstein et al screened positive for psychiatric morbidity had twice the odds of having poor glycemic control with high HbA1c(22).A meta-analysis found only two out of eight studies (1990-1999) to support this association (44). Several studies like Wake et al., Kim et al., Duffus et al.,Akbas et al., no association of glycemic control with emotional and behaviours (16-18, 38) . Our study also did not find statistically significant correlation between poor glycemic index with psychological distress and problem behaviours.The HbA1C was comparatively higher in children and adolescents with greater scores in CBCL and SDQ

scales but insignificant. The reason may be glycemic index that was recorded was the latest value which was routinely done when the patients visited the centre.We didn't compare between the HbA1c at the time of diagnosis compared to the present value, which would give a wider view of relationship between glycemic control and problem behaviours. We found that even if the glycemic index is low the child can have psychological issues due to various other reasons. A study by Escobar et al., showed few factors like eating disturbances, depression, and peer relations were related to poor metabolic control. These interplay of these factors among each other was not analysed in our study, which is a scope in further research, along with the mechanism of the interactions (46).

Type of insulin regimen, number of hospitalizations since last 6 months and since time of diagnosis, did not find any significant association with the emotional and behavioural problems. Agrawal et al. (2016), also found no significant association of insulin regime with increased CPMS scores(29).But the total number of hospitalization was significantly associated with CPMS scores showing 16% increase in scores. In our study overall fair control of glycemic index, proper maintenance of sugar monitoring diary and treatment regimens as advised by the paediatrician were followed by most the participants in our setting. The study population majorly belonged to rural areas with lower educational status, may not realize much variation in blood sugar as a risk factor, and thus due to ignorance the resultant stress will be low. This could also be one of the main factors for lower total scores in both the scales with lower intensity of problems elicited, although the frequency of problem behaviour is higher in T1DM subjects compared to the heathy controls.

# CONCLUSION

In this cross-sectional study, the emotional and behavioural problems in children and adolescents with T1DM were significantly higher in cases than in healthy controls. Internalizing problems were higher than the externalizing problems in the study population. Most common among those being anxious, withdrawn nature, emotional and peer relational problems. The prevalence of all domains of problems was greater in cases compared to the age and gender matched controls which was statistically significant. This result gives an insight into the physical and psychological burden upon those with the diagnosis of this chronic illness. Apart from the difficulties in management of illness, fear and apprehension of not having a permanent cure for the illness puts additional stress upon them and their caregivers/parents.

The relationship of other factors like current age, gender, birth order, education, socio economic status, family setting and caregiver/parents' demographics, were not statistically significant with the presence of problem behaviours. Those with difficult and easy to warm up temperament were seen to have more emotional and behavioural problems. Also, those with celiac disease as co morbidity had a significant association with problem behaviours. Those with higher scores in various emotional and behavioural problems had longer screen time and poor peer adjustment. Other factors like glycaemic index (HbA1c), age of diagnosis of T1DM, total duration of illness, number of hospitalizations, type of insulin regime, dietary habits didn't associate with higher problem behaviours.

There is a two-way relationship between psychological wellbeing and control of T1DM.Early identification of psychosocial problems by regular screening is important for overall management. More emphasis and detailed assessment would be necessary in those with poorly adjusted temperament, peer problems and comorbid illnesses. Proper psychoeducation should be imparted to patients and parents/caregivers. All children with this chronic illness should be screened for timely identification of emotional distress. Due referrals should be made whenever necessary by diabetic care providers.

**Strengths of the study**

1. This is one of the few Indian studies, which assess the psychological issues in T1DM children and adolescents using validated questionnaires. The study also highlights the various sociodemographic, clinical factors and their interplay with another which are predictors of increased emotional and behavioural problems in this population.
2. The study also included age and gender matched controls from community which gives weightage to the results on comparison with healthy population.
3. Unlike in western culture, our study was done in Indian settings where familial support and bonding has a major role. Also due to the COVID 19 pandemic, the social support played a major role in management of chronic illnesses.

**Limitations**

1. Small sample size
2. This was a cross sectional study, so the attributable risk could not be calculated.
3. The study was conducted in a tertiary care hospital setting. Sample collection from a more diverse setting can improve the generalizability of data.
4. The used questionnaire was parent/ guardian rated carrying an inherited risk of subjective bias.
5. As sample collection was during the COVID 19 pandemic, the subjects were mostly confined to homes which is not the usual scenario

**Clinical implications of the study**

1. The proportion of emotional and problem behaviours was higher in children and adolescents with diagnosis of T1DM than those without T1DM. Though the problems were not in the clinical range, results showed increased risk in emergence of psychiatric illness than their healthy peers. This implies the importance of periodic screening of those with T1DM

2. Once diagnosed with T1DM proper guidance and psychoeducation of child and parent/guardian should to be done

3. Capacity building for proper screening and referral must be done for paediatricians/endocrinologists across the country.

4. A quick screening tools or clinical interviews may be used regularly on a 6 monthly basis to monitor emergence of emotional or behavioural problems in children
5. Building up referral system for those screened positive for comprehensive management of T1DM and psychiatric comorbidities if any
6. For paediatricians/endocrinologists/physicians' capacity building for basic counselling services must be done
7. An interdisciplinary approach may reduce the stigma related to consulting a psychiatrist and improve overall management of illness
8. Enhancing social support of caregivers can reduce the burden for children in management.

**Future Directions**

The studies with larger sample sizes and longitudinal designs are needed to see the emergence and course of psychosocial problems. Use of scales developed for specifically Indian population can be considered for inclusion of the sociocultural context. Exploratory studies can be done to identify difficulties faced by patients with T1DM and their caregivers to plan for primary prevention of psychosocial issues. A short assessment tool can be made including all the risk factors for screening of patients with T1DM.

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# ANNEXURE 1


अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर
All India Institute of Medical Sciences, Jodhpur
संस्थागत नैतिकता समिति
Institutional Ethics Committee


No. AIIMS/IEC/2021/3520 Date: 12/03/2021

## ETHICAL CLEARANCE CERTIFICATE

Certificate Reference Number: **AIIMS/IEC/2021/3355**

Project title: **"Assessment of emotional and behavioural problems in children and adolescents with type 1 diabetes mellitus: A comparative study"**

| | |
|---|---|
| Nature of Project: | **Research Project Submitted for Expedited Review** |
| Submitted as: | **M.D. Dissertation** |
| Student Name: | **Dr. Adharshna T K** |
| Guide: | **Dr. Pratibha Gehlawat** |
| Co-Guide: | **Dr. Kuldeep Singh, Dr. Varuna Vyas & Dr. Naresh Nebhinani** |

Institutional Ethics Committee after thorough consideration accorded its approval on above project.

The investigator may therefore commence the research from the date of this certificate, using the reference number indicated above.

Please note that the AIIMS IEC must be informed immediately of:

- Any material change in the conditions or undertakings mentioned in the document.
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The Principal Investigator must report to the AIIMS IEC in the prescribed format, where applicable, bi-annually, and at the end of the project, in respect of ethical compliance.

AIIMS IEC retains the right to withdraw or amend this if:

- Any unethical principle or practices are revealed or suspected
- Relevant information has been withheld or misrepresented

AIIMS IEC shall have an access to any information or data at any time during the course or after completion of the project.

Please Note that this approval will be rectified whenever it is possible to hold a meeting in person of the Institutional Ethics Committee. It is possible that the PI may be asked to give more clarifications or the Institutional Ethics Committee may withhold the project. The Institutional Ethics Committee is adopting this procedure due to COVID-19 (Corona Virus) situation.

If the Institutional Ethics Committee does not get back to you, this means your project has been cleared by the IEC.

On behalf of Ethics Committee, I wish you success in your research.

**Dr. Praveen Sharma**
Member Secretary

Member secretary
Institutional Ethics Committee
AIIMS,Jodhpur


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# ANNEXURE 2

## Patient information sheet (English)

**Name of the patient:** **Patient ID.:**

Assessment of emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus: A comparative study

**1. Aim of the study:** To assess the emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus.

**2. Study site:** Children presenting to Department of Paediatrics at All India Institute of Medical Sciences, Jodhpur, Rajasthan.

**3. Study procedure:** All children presenting to Department of Paediatrics with diagnosis of type 1 Diabetes Mellitus will form the study participants (cases). A written informed consent will be taken from the parents, as well as the assent or consent will be taken from the children, whichever applicable. Socio-demographic and clinical profile will be assessed. Child behaviour checklist and Strength and Difficulties Questionnaire will be applied and after a detailed clinical interview diagnosis will be confirmed as per DSM 5[19].

**4. Likely benefit:** In view of greater risk of psychological problems associated with type 1 Diabetes Mellitus, index study will benefit in providing comprehensive care with optimizing the overall management. This should further help in long-term management, course and outcome of the illness.

**5. Confidentiality:** All the data collected from each study participant will be kept highly confidential.

**6. Risk:** Enrollment in above study poses no substantial risk to any of the study participant and if any point of time participant wants to withdraw himself/ herself, he/ she can do so voluntarily at any point of time during the study and routine care will continue as per institutional protocol.

For further information / questions, the following personnel can be contacted: Dr. Adharshna TK, Junior Resident, Department of Psychiatry, All India Institute of Medical Sciences, Jodhpur, Rajasthan. Ph.: 9446573269

# ANNEXURE 3

## Patient information sheet (Hindi)

टाइप 1 मधुमेह मेलिटस के साथ बच्चों और किशोरों में भावनात्मक और व्यवहार समस्याओं का आकलन: एक तुलनात्मक अध्ययन

1. **अध्ययन का उद्देश्य**: टाइप 1 मधुमेह के साथ बच्चों और किशोरों में भावनात्मक और व्यवहारिक समस्याओं का आकलन करना।

2. **अध्ययन स्थल**: अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर, राजस्थान में बाल रोग विभाग में प्रस्तुत बच्चे।

3. **अध्ययन प्रक्रिया**: टाइप 1 मधुमेह मेलिटस के निदान के साथ बाल रोग विभाग को पेश करने वाले सभी बच्चे अध्ययन प्रतिभागियों (मामलों) का गठन करेंगे । माता-पिता से लिखित सूचित सहमति ली जाएगी, साथ ही बच्चों से सहमति या सहमति ली जाएगी, जो भी लागू होगा। सामाजिक-जनसांख्यिकीय और नैदानिक प्रोफाइल का आकलन किया जाएगा। बाल व्यवहार चेकलिस्ट और शक्ति और कठिनाइयों प्रश्नावली लागू किया जाएगा और निदान डीएसएम के अनुसार पुष्टि की जाएगी ।

4. **संभावित लाभ**: टाइप 1 डीएम से जुड़ी मनोवैज्ञानिक समस्याओं की उच्च दरों की बेहतर समझ के लिए महत्वपूर्ण है और प्रबंधन को अनुकूलित करना। इससे बच्चे के समग्र उपचार और मनोवैज्ञानिक प्रबंधन में सुधार होगा।

5**. गोपनीयता**: प्रत्येक अध्ययन प्रतिभागी से एकत्र किए गए सभी डेटा को अत्यधिक गोपनीय रखा जाएगा।

6**. जोखिम**: उपरोक्त अध्ययन में नामांकन से किसी भी अध्ययन प्रतिभागी के लिए कोई पर्याप्त जोखिम नहीं है और यदि कोई समय प्रतिभागी स्वयं को वापस लेना चाहता है, तो वह अध्ययन के दौरान किसी भी समय स्वेच्छा से ऐसा कर सकता और नियमित देखभाल संस्थागत प्रोटोकॉल के अनुसार जारी रहेगी है ।

अधिक जानकारी के लिए और अधिक जानकारी के लिए निम्नलिखित कार्मिकों से संपर्क किया जा सकता है। -डॉ. आदर्शना टीके, जूनियर रेजिडेंट, मनोरोग विभाग, अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर, राजस्थान। पीएच: 9446573269

# ANNEXURE 4

**All India Institute of Medical Sciences**
**Jodhpur, Rajasthan**

## Informed Consent Form

Title of Thesis/Dissertation: "**Assessment of emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus: A comparative study"**

Name of PG Student: Dr. Adharshna T K Mob. No. : 9446573269

Patient/Volunteer Identification No. : _____

I, _____ S/o or D/o _____

R/o _____give my full, free, voluntary consent to be a part of the study **"Assessment of emotional and behavioural problems in children and adolescents with Type 1 Diabetes Mellitus: A comparative study"**. The procedure and nature of which has been explained to me in my own language to my full satisfaction. I confirm that I have had the opportunity to ask questions.

I understand that my participation is voluntary and am aware of my right to opt out of the study at any time without giving any reason.

I understand that the information collected about me and any of my medical records may be looked at by responsible individual from All India Institute of Medical Sciences, Jodhpur. I give permission for these individuals to have access to my records.

Date : _____ _____

Place : _____ Signature/Left thumb impression

This to certify that the above consent has been obtained in my presence.

Date : _____ _____

Place : _____ Signature of PG Student

1. Witness 1

_____
Signature
Name: _____
Address : _____

2. Witness 2

_____
Signature
Name: _____
Address : _____

## ANNEXURE 5

**ऑल इंडिया इंस्टिट्यूट ऑफ मैडिकल साईंडसस**
**जोधपुर, राजस्थान**

**<u>सूचित सहमति प्रपत्र</u>**

थीसिस / शोध प्रबंध का शीर्षक : **टाइप 1 मधुमेह मेलिटस के साथ बच्चों और किशोरों में भावनात्मक और व्यवहारिक समस्याओं का आकलन** :एक तुलनात्मक अध्ययन

पीजी छात्र का नाम :डॉ. आदर्शना टीके
टेलीफोन नंबर : 9446573269
रोगी / स्वयंसेवक पहचान संख्या :_____

मैं, _____पुत्र /पुत्री_____

निवासी_____
मेरी पूर्ण, मुक्त, स्वैच्छिक सहमति को "टाइप 1 मधुमेह मेलिटस के साथ बच्चों और किशोरों में भावनात्मक और व्यवहारिक समस्याओं का आकलन एक तुलनात्मक अध्ययन :" अध्ययन का एक हिस्सा बनने के लिए दें, जिसकी प्रक्रिया और प्रकृति ने मुझे अपनी पूर्ण संतुष्टि के लिए अपनी भाषा में समझाया है। मैं पुष्टि करता हूं कि मुझे सवाल पूछने का अवसर मिला है।
मैं समझता हूं कि मेरी भागीदारी स्वैच्छिक है और बिना किसी कारण के किसी भी समय अध्ययन से बाहर निकलने के मेरे अधिकार से अवगत हूं।
मैं समझता हूं कि मेरे और मेरे किसी भी मेडिकल रिकॉर्ड के बारे में एकत्रित जानकारी को अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर अधिकारियों के जिम्मेदार व्यक्ति द्वारा देखा जा सकता नियामक है। मैं इन व्यक्तियों को अपने रिकॉर्ड तक पहुंचने की अनुमति देता हूं।

दिनांक : _____
जगह :_____ **हस्ताक्षर / बाएं अंगूठे का निशान**

यह प्रमाणित करने के लिए कि मेरी उपस्थिति में उपरोक्त सहमति प्राप्त हुई है।

दिनांक : _____
जगह :_____ **पीजी छात्र के हस्ताक्षर**

| | |
|---|---|
| 1. साक्षी | 2. साक्षी |
| हस्ताक्षर | हस्ताक्षर |
| नाम | नाम |
| पता | पता |

# ANNEXURE 6

## Assent Form (English)

I, Dr. Adharshna T K, Junior resident at AIIMS, Jodhpur. We are doing a study "**Assessment of emotional and behavioural problems in children and adolescents with type 1 Diabetes Mellitus: A comparative study"**

I am asking you to take part in the research study because your mother has agreed and recommended you as a participant.

For this research, we will ask you some questions. We will keep all your answers private, and will not show them to anyone. Only Doctors from Dept. of Psychiatry, who are working on the study will see them.

We don't think that any big problems will happen to you as part of this study.

You can feel good about helping us to help children who are in need for treatment from us.

You should also know that:

- You do not have to be in this study if you do not want to. You won't get into any trouble if you say no.
- You may stop being in the study at any time. (If there is a question you don't want to answer, you can refuse)
- Your parent(s)/guardian(s) were asked if it is OK for you to be in this study. Even if they say it's OK, it is still your choice whether or not to take part.
- You can ask any questions you have, now or later. If you think of a question later, you or your parents can contact me. (Details given below)

**Sign this form only if you:**

- have understood what you will be doing for this study,
- have had all your questions answered,
- have talked to your parent(s)/legal guardian about this project, and
- agree to take part in this research

_____

Child's Signature Name Date

_____

Name of Parent(s) or Legal Guardian(s)

_____

Researcher explaining study
Signature Name Date

**Contact details:** Dr. Adharshna T K

Junior resident (Dept of Psychiatry), AIIMS, Jodhpur. Phone no: 9446573269

## ANNEXURE 7

**Assent Form (Hindi)**

मैं डॉ .आदर्शना टीके हूं। हम एक अध्ययन कर रहे हैं "**टाइप मधुमेह मेलिटस के साथ बच्चों और 1 किशोरों में भावनात्मक और व्यवहारिक समस्याओं का आकलन :एक तुलनात्मक अध्ययन**",मैं आपसे शोध अध्ययन में भाग लेने के लिए कह रहा हूं क्योंकि आपकी मां ने आपकी सहमति और सिफारिश की है।इस शोध के लिए, हम आपसे कुछ प्रश्न पूछेंगे। हम आपके सभी उत्तरों को निजी रखेंगे, और उन्हें किसी को नहीं दिखाएंगे। केवल मनोरोग विभाग के डॉक्टर, जो अध्ययन पर काम कर रहे हैं, उन्हें देखेंगे।

हमें नहीं लगता कि इस अध्ययन के हिस्से के रूप में आपको कोई बड़ी समस्या होगी।आप उन बच्चों की मदद करने में हमारी मदद कर सकते हैं, जिन्हें हमसे इलाज की जरूरत है।

आपको यह भी पता होना चाहिए कि:

• यदि आप नहीं चाहते हैं तो आपको इस अध्ययन में शामिल होने की आवश्यकता नहीं है। यदि आप नहीं कहते हैं तो आप किसी भी परेशानी में नहीं पड़ेंगे।

• आप किसी भी समय अध्ययन में शामिल होना बंद कर सकते हैं। (यदि कोई सवाल है जिसका आप जवाब नहीं देना चाहते हैं, तो आप मना कर सकते हैं)

• आपके माता-पिता / अभिभावकों से पूछा गया कि क्या आपके लिए इस अध्ययन में रहना ठीक है। भले ही वे इसे ठीक कहें, फिर भी भाग लेना या न लेना आपकी पसंद है।

• आप अपने किसी भी प्रश्न को, अभी या बाद में पूछ सकते हैं। यदि आप बाद में एक प्रश्न के बारे में सोचते हैं, तो आप या आपके माता-पिता मुझसे संपर्क कर सकते हैं। (नीचे दिए गए विवरण)

इस फॉर्म पर केवल तभी हस्ताक्षर करें जब आप:

• आप समझ चुके हैं कि आप इस अध्ययन के लिए क्या कर रहे हैं,

• आपके सभी सवालों के जवाब दिए हैं,

• इस परियोजना के बारे में आपके माता-पिता / कानूनी अभिभावक से बात की है, और

• इस शोध में भाग लेने के लिए सहमत हैं

_____

बच्चे का हस्ताक्षर नाम दिनांक

_____

अभिभावक का नाम या कानूनी अभिभावक

_____

अध्ययन की व्याख्या करने वाले शोधकर्ता हस्ताक्षर का नाम दिनांक संपर्क विवरण: डॉ. आदर्शना टीके ,मनोचिकित्सा विभाग, अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर, राजस्थान | दूरभाष न. 9446573269

# ANNEXURE -8

## Socio demographic Details and Clinical Profile

**Identifying data:**

Name: Date of Evaluation:

Age : Birth order:

Gender :M/F Residence: Urban/Rural

Education :

Religion: Hindu/Muslim/Christian/Sikh/Others

Monthly family income (per capita):

**Information given by**

Parent's/Guardian's

Name:

Relation with patient:

- Father
- Mother
- Specify if others:……..

Age:

Education: Father's

Mother's

Occupation: Father's

Mother's

**PAST HISTORY**:

Physical: Y/N, If yes:……

Psychiatric illness: Y/N If yes:……..

On any treatment:……

Celiac disease :Y/N

Thyroid disease :Y/N

**PERSONAL AND DEVELOPMENTAL HISTORY:**

Parents age when child was born:

Time between marriage and childbirth

Parental attitude towards pregnancy: wanted/ unwanted

H/o miscarriage, stillbirth, living child with congenital anomalies

Prenatal: eventful/uneventful

Natal: eventful/uneventful

Postnatal**:** uneventful/eventful

Feeding habits: age of weaning

Developmental milestones

Developmental problems (if any) of speech, language, motor functions:….

Menarche attained: Y/N

Physical activity (hours) (<1 hours; >1 hour)

Screen time (hours) (<2 hours; 2-4 hours; >4 hours)

Peer adjustment:

- Adequate
- Inadequate

School adjustment

- Adequate
- Inadequate

Academic achievement:

Good (Grades A, B)

Fair (Grades C, D)

Poor (Grades E, F)

Knowledge of child/adolescent regarding illness: Adequate/Inadequate

**TEMPERAMENT:** Easy/Difficult/ Slow to warm up

**FAMILY HISTORY:**

1. Type of family (joint/ nuclear/ extended/ others)
2. Consanguinity: Y/N
3. Family – functioning: any discord between family members Y/N
   lack of communication: any problems with the family as a whole Y/N
   both parents working: Y/N
   Parent-child interaction (warm/hostile)
4. Family history of psychiatric illness or substance abuse:
5. Family history major physical or surgical illness
   (Diabetes, Hypertension, Epilepsy, TB etc.)
6. Social and environmental conditions – type of dwelling/ degree of crowding

## Clinical Profile

Type 1 DM diagnosed at: ……years

Duration of illness:

Treatment initiated at:

- Paediatrics department, AIIMS Jodhpur
- Others: …….

Following up at:

- AIIMS Jodhpur
- Others: …….

Number of hospitalizations since diagnosis: …..

- Indications …….
- Duration…….
- Remarks…….

Number of hospitalizations in last 6 months: …..

Treatment modality: Split mix insulin/ Basal bolus insulin/ insulin pump

Frequency of blood sugar monitoring:

1. 3 to 4 times a day
2. Once a day
3. 1 to 4 times a week
4. Once a week
5. Less than once a week

Dietary habits- Follows prescribed diet plan: Y/N

**Biochemical Investigations:**

Haemoglobin A1c …..

# ANNEXURE 9

## Child Behaviour Checklist (6-18)

Please print **CHILD BEHAVIOR CHECKLIST FOR AGES 6-18** For office use only ID #

CHILD'S FULL NAME First Middle Last

CHILD'S GENDER ☐ Boy ☐ Girl | CHILD'S AGE | CHILD'S ETHNIC GROUP OR RACE

TODAY'S DATE Mo. ___ Day ___ Year ___ | CHILD'S BIRTHDATE Mo. ___ Day ___ Year ___

GRADE IN SCHOOL _____

NOT ATTENDING SCHOOL ☐

Please fill out this form to reflect *your* view of the child's behavior even if other people might not agree. Feel free to print additional comments beside each item and in the space provided on page 2. ***Be sure to answer all items.***

**PARENTS' USUAL TYPE OF WORK, even if not working now.**
*(Please be specific — for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)*
PARENT 1 (or FATHER)
TYPE OF WORK _____
PARENT 2 (or MOTHER)
TYPE OF WORK _____

**THIS FORM FILLED OUT BY: (print your full name)**
_____
Your gender: ☐ Man ☐ Woman ☐ Other (specify)
Your relation to the child:
☐ Biological Parent ☐ Step Parent ☐ Grandparent
☐ Adoptive Parent ☐ Foster Parent ☐ Other (specify):

**I. Please list the sports your child most likes to take part in.** For example: swimming, baseball, skating, skate boarding, bike riding, fishing, etc.

| | Compared to others of the same age, about how much time does he/she spend in each? | | | | Compared to others of the same age, how well does he/she do each one? | | | |
|---|---|---|---|---|---|---|---|---|
| | Less Than Average | Average | More Than Average | Don't Know | Below Average | Average | Above Average | Don't Know |
| ☐ None | | | | | | | | |
| a. _____ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. _____ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. _____ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**II. Please list your child's favorite hobbies, activities, and games, other than sports.** For example: video games, dolls, reading, piano, crafts, cars, computers, singing, etc. (Do ***not*** include listening to radio, TV, or other media.)

| | Compared to others of the same age, about how much time does he/she spend in each? | | | | Compared to others of the same age, how well does he/she do each one? | | | |
|---|---|---|---|---|---|---|---|---|
| | Less Than Average | Average | More Than Average | Don't Know | Below Average | Average | Above Average | Don't Know |
| ☐ None | | | | | | | | |
| a. _____ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. _____ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. _____ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**III. Please list any organizations, clubs, teams, or groups your child belongs to.**

| | Compared to others of the same age, how active is he/she in each? | | | |
|---|---|---|---|---|
| | Less Active | Average | More Active | Don't Know |
| ☐ None | | | | |
| a. _____ | ☐ | ☐ | ☐ | ☐ |
| b. _____ | ☐ | ☐ | ☐ | ☐ |
| c. _____ | ☐ | ☐ | ☐ | ☐ |

**IV. Please list any jobs or chores your child has.** For example: doing dishes, babysitting, making bed, working in store, etc. (Include both paid and unpaid jobs and chores.)

| | Compared to others of the same age, how well does he/she carry them out? | | | |
|---|---|---|---|---|
| | Below Average | Average | Above Average | Don't Know |
| ☐ None | | | | |
| a. _____ | ☐ | ☐ | ☐ | ☐ |
| b. _____ | ☐ | ☐ | ☐ | ☐ |
| c. _____ | ☐ | ☐ | ☐ | ☐ |

***Be sure you answered all items. Then see other side.***



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PAGE 1

*Please print. Be sure to answer all items.*

**V. 1. About how many close friends does your child have? (Do *not* include brothers & sisters)**

☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

**2. About how many times a week does your child do things with any friends outside of regular school hours? (Do *not* include brothers & sisters)** ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

**VI. Compared to others of his/her age, how well does your child:**

| | Worse | Average | Better | |
|---|---|---|---|---|
| a. Get along with his/her brothers & sisters? | ☐ | ☐ | ☐ | ☐ Has no brothers or sisters |
| b. Get along with other kids? | ☐ | ☐ | ☐ | |
| c. Behave with his/her parents? | ☐ | ☐ | ☐ | |
| d. Play and work alone? | ☐ | ☐ | ☐ | |

**VII. 1. Performance in academic subjects.** ☐ Does not attend school because _____

| *Check a box for each subject that child takes* | Failing | Below Average | Average | Above Average |
|---|---|---|---|---|
| a. Reading, English, or Language Arts | ☐ | ☐ | ☐ | ☐ |
| b. History or Social Studies | ☐ | ☐ | ☐ | ☐ |
| c. Arithmetic or Math | ☐ | ☐ | ☐ | ☐ |
| d. Science | ☐ | ☐ | ☐ | ☐ |
| e. _____ | ☐ | ☐ | ☐ | ☐ |
| f. _____ | ☐ | ☐ | ☐ | ☐ |
| g. _____ | ☐ | ☐ | ☐ | ☐ |

Other academic subjects–for example: computer courses, foreign language, business. Do *not* include gym, shop, driver's ed., or other nonacademic subjects.

**2. Does your child receive special education or remedial services or attend a special class or special school?**

☐ No ☐ Yes—kind of services, class, or school:

**3. Has your child repeated any grades?** ☐ No ☐ Yes—grades and reasons:

**4. Has your child had any academic or other problems in school?** ☐ No ☐ Yes—please describe:

**When did these problems start?**

**Have these problems ended?** ☐ No ☐ Yes–when?

**Does your child have any illness or disability (either physical or mental)?** ☐ No ☐ Yes—please describe:

**What concerns you most about your child?**

**Please describe the best things about your child.**





*Be sure you answered all items.*

***Please print. Be sure to answer all items.***

Below is a list of items that describe children and youths. For each item that describes your child ***now or within the past 6 months***, please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the item is ***somewhat or sometimes true*** of your child. If the item is ***not true*** of your child, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to your child.

**0 = Not True (as far as you know)** **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

**0 1 2** 1. Acts too young for his/her age
**0 1 2** 2. Drinks alcohol without parents' approval (describe):

_____

**0 1 2** 3. Argues a lot
**0 1 2** 4. Fails to finish things he/she starts
**0 1 2** 5. There is very little he/she enjoys
**0 1 2** 6. Bowel movements outside toilet
**0 1 2** 7. Bragging, boasting
**0 1 2** 8. Can't concentrate, can't pay attention for long
**0 1 2** 9. Can't get his/her mind off certain thoughts; obsessions (describe):

_____

**0 1 2** 10. Can't sit still, restless, or hyperactive
**0 1 2** 11. Clings to adults or too dependent
**0 1 2** 12. Complains of loneliness
**0 1 2** 13. Confused or seems to be in a fog
**0 1 2** 14. Cries a lot
**0 1 2** 15. Cruel to animals
**0 1 2** 16. Cruelty, bullying, or meanness to others
**0 1 2** 17. Daydreams or gets lost in his/her thoughts
**0 1 2** 18. Deliberately harms self or attempts suicide
**0 1 2** 19. Demands a lot of attention
**0 1 2** 20. Destroys his/her own things
**0 1 2** 21. Destroys things belonging to his/her family or others
**0 1 2** 22. Disobedient at home
**0 1 2** 23. Disobedient at school
**0 1 2** 24. Doesn't eat well
**0 1 2** 25. Doesn't get along with other kids
**0 1 2** 26. Doesn't seem to feel guilty after misbehaving
**0 1 2** 27. Easily jealous
**0 1 2** 28. Breaks rules at home, school, or elsewhere
**0 1 2** 29. Fears certain animals, situations, or places, other than school (describe):

_____

**0 1 2** 30. Fears going to school
**0 1 2** 31. Fears he/she might think or do something bad
**0 1 2** 32. Feels he/she has to be perfect
**0 1 2** 33. Feels or complains that no one loves him/her
**0 1 2** 34. Feels others are out to get him/her
**0 1 2** 35. Feels worthless or inferior
**0 1 2** 36. Gets hurt a lot, accident-prone
**0 1 2** 37. Gets in many fights
**0 1 2** 38. Gets teased a lot
**0 1 2** 39. Hangs around with others who get in trouble
**0 1 2** 40. Hears sound or voices that aren't there (describe):

_____

**0 1 2** 41. Impulsive or acts without thinking
**0 1 2** 42. Would rather be alone than with others
**0 1 2** 43. Lying or cheating
**0 1 2** 44. Bites fingernails
**0 1 2** 45. Nervous, highstrung, or tense
**0 1 2** 46. Nervous movements or twitching (describe):

_____

**0 1 2** 47. Nightmares
**0 1 2** 48. Not liked by other kids
**0 1 2** 49. Constipated, doesn't move bowels
**0 1 2** 50. Too fearful or anxious
**0 1 2** 51. Feels dizzy or lightheaded
**0 1 2** 52. Feels too guilty
**0 1 2** 53. Overeating
**0 1 2** 54. Overtired without good reason
**0 1 2** 55. Overweight
56. Physical problems ***without know medical cause:***
**0 1 2** a. Aches or pains (***not*** stomach or headaches)
**0 1 2** b. Headaches
**0 1 2** c. Nausea, feels sick
**0 1 2** d. Problems with eyes (***not*** if corrected by glasses) (describe):
**0 1 2** e. Rashes or other skin problems
**0 1 2** f. Stomachaches
**0 1 2** g. Vomiting, throwing up
**0 1 2** h. Other (describe):

_____

***Please print. Be sure to answer all items.***

**0 = Not True (as far as you know)** **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe):

0 1 2 59. Plays with own sex parts in public
0 1 2 60. Plays with own sex parts too much
0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy
0 1 2 63. Prefers being with older kids
0 1 2 64. Prefers being with younger kids
0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe):

0 1 2 67. Runs away from home
0 1 2 68. Screams a lot
0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe):

0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Sets fires
0 1 2 73. Sexual problems (describe):

0 1 2 74. Showing off or clowning
0 1 2 75. Too shy or timid
0 1 2 76. Sleeps less than most kids
0 1 2 77. Sleeps more than most kids during day and/or night (describe):

0 1 2 78. Inattentive or easily distracted
0 1 2 79. Speech problem (describe):

0 1 2 80. Stares blankly
0 1 2 81. Steals at home
0 1 2 82. Steals outside the home
0 1 2 83. Stores up too many things he/she doesn't need (describe):

0 1 2 84. Strange behavior (describe):

0 1 2 85. Strange ideas (describe):

0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings
0 1 2 88. Sulks a lot
0 1 2 89. Suspicious
0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self
0 1 2 92. Talks or walks in sleep (describe):

0 1 2 93. Talks too much
0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper
0 1 2 96. Thinks about sex too much
0 1 2 97. Threatens people
0 1 2 98. Thumb-sucking
0 1 2 99. Smokes, chews, or sniffs tobacco
0 1 2 100. Trouble sleeping (describe):

0 1 2 101. Truancy, skips school
0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud
0 1 2 105. Uses drugs for nonmedical purposes (***don't*** include alcohol or tobacco) (describe):

0 1 2 106. Vandalism
0 1 2 107. Wets self during the day
0 1 2 108. Wets the bed
0 1 2 109. Whining
0 1 2 110. Wishes to be of opposite sex
0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries
113. Please write in any problems your child has that were not listed above:
0 1 2
0 1 2
0 1 2





***Please be sure you answered all items.***

# Strength and Difficulties Questionnaire (Hindi)

## शक्तियों व कठिनाईयों के बारे में सवालनामा

(HINDI)

कृपया हर कथन के सामने 'सही नहीं है,' 'कुछ हद तक सही है,' 'निश्चय ही सही है' वाले ख़ानों में टिक का निशान लगा दें। अगर आप सभी बातों का जवाब दे दें तो हमें मदद मिलेगी भले ही आप उसका जवाब पक्के तौर पर न जानते हों या वह सवाल आपको मूर्खतापरा लगता हो! कृपया अपने जवाब पिछले छः महीनों के दौरान, अपने बच्चे के व्यवहार के आधार पर दें।

आपके बच्चे का नाम..... लड़का/लड़की

जन्म–तिथि.....

| | सही नहीं है | कुछ हद तक सही है | निश्चय ही सही है |
|---|---|---|---|
| अन्य लोगों की भावनाओं का लिहाज़ रखने वाला | ❑ | ❑ | ❑ |
| बेचैन, ज़रूरत से ज़्यादा फुरतीला, अधिक समय तक चुप–चाप नहीं बैठ सकता | ❑ | ❑ | ❑ |
| अक्सर सिर–दर्द, पेट–दर्द या मितली आने की शिकायत करता है | ❑ | ❑ | ❑ |
| अन्य बच्चों के साथ ख़ुशी से चीज़ें बाँट लेता है (खाने–पीने की चीज़ें, खिलौने, पैंसिल वगैरह) | ❑ | ❑ | ❑ |
| अक्सर बदमिज़ाजी या चिड़चिड़ापन दिखाता है | ❑ | ❑ | ❑ |
| अकेले रहना और खेलना अधिक पसन्द करता है | ❑ | ❑ | ❑ |
| आम तौर पर आज्ञाकारी है, अक्सर बड़ों का कहना मानता है | ❑ | ❑ | ❑ |
| अनेक चिन्ताएँ, अक्सर चिन्तित लगता है | ❑ | ❑ | ❑ |
| अगर किसी को चोट लग जाए, कोई उदास हो या किसी की तबियत ख़राब हो जाए तो मदद करता है | ❑ | ❑ | ❑ |
| लगातार अधीर व छटपटाता है | ❑ | ❑ | ❑ |
| कम से कम एक अच्छा दोस्त है | ❑ | ❑ | ❑ |
| अक्सर अन्य बच्चों के साथ लड़ाई करता है या उन्हें डराता–धमकाता है | ❑ | ❑ | ❑ |
| अक्सर अप्रसन्न, उदास या रुआँसा रहता है | ❑ | ❑ | ❑ |
| आम तौर पर अन्य बच्चों द्वारा पसन्द किया जाता है | ❑ | ❑ | ❑ |
| बड़ी जल्दी किसी चीज़ से ध्यान हट जाता है, एकाग्रचित्त नहीं रहता | ❑ | ❑ | ❑ |
| नई स्थितियों में बेचैन हो जाता है, बहुत जल्दी आत्म–विश्वास खो बैठता है | ❑ | ❑ | ❑ |
| अपने से छोटे बच्चों के प्रति दयालू है | ❑ | ❑ | ❑ |
| अक्सर झूठ बोलता है या धोखा देता है | ❑ | ❑ | ❑ |
| अन्य बच्चे तंग करते हैं या डराते–धमकाते हैं | ❑ | ❑ | ❑ |
| अक्सर दूसरों की मदद करने के लिए ख़ुद ही तैयार हो जाता है (माता–पिता, अध्यापक, अन्य बच्चे) | ❑ | ❑ | ❑ |
| कुछ भी करने से पहले सोचता है | ❑ | ❑ | ❑ |
| घर, स्कूल या किसी और जगह से चोरी करता है | ❑ | ❑ | ❑ |
| बच्चों की बजाय बड़ों के साथ ख़ुश रहता है | ❑ | ❑ | ❑ |
| भयभीत रहता है, बहुत जल्दी डर जाता है | ❑ | ❑ | ❑ |
| किसी काम को पूरा करता है, ध्यान से करता है | ❑ | ❑ | ❑ |

कृपया अगले पृष्ठ पर देखें – वहाँ आपसे कुछ और सवाल पूछे गए हैं

कुल मिला कर, क्या आप सोचते हैं कि आपके बच्चे को नीचे लिखी बातों में से किसी एक या एक से अधिक में कठिनाईयाँ होती हैं: भावनाएँ, ध्यानकेन्द्रित करना, व्यवहार या अन्य लोगों के साथ मिलने जुलने में?

| नहीं | हाँ– छोटी-मोटी कठिनाई | हाँ– निश्चय ही कठिनाई | हाँ– भारी कठिनाई |
|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ |

अगर आपने 'हाँ' में जवाब दिया है, तो कृपया इन कठिनाईयों के बारे में नीचे लिखे सवालों के जवाब दीजिए:

* ये कठिनाईयाँ कब से हैं?

| एक महीने से कम | 1 से 5 महीनों से | 6 से 11 महीनों से | एक वर्ष या इससे अधिक समय से |
|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ |

* क्या इन कठिनाईयों के कारण आपका बच्चा उदास या निराश हो जाता है?

| बिल्कुल नहीं | थोड़ा-सा | काफ़ी ज़्यादा | बहुत ज़्यादा |
|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ |

* क्या इन कठिनाईयों के कारण, आपके बच्चे की रोज़ाना ज़िन्दगी में नीचे लिखी बातों में आपके बच्चे के लिए अड़चनें पैदा होती हैं?

| | बिल्कुल नहीं | थोड़ा-सा | काफ़ी ज़्यादा | बहुत ज़्यादा |
|---|---|---|---|---|
| घर का जीवन | ❑ | ❑ | ❑ | ❑ |
| दोस्तियाँ | ❑ | ❑ | ❑ | ❑ |
| क्लासरूम में पढ़ना–लिखना | ❑ | ❑ | ❑ | ❑ |
| फ़ुरसत की गतिविधियाँ | ❑ | ❑ | ❑ | ❑ |

* क्या इन कठिनाईयों के कारण, आप पर या आपके समूचे परिवार पर भार पड़ता है?

| बिल्कुल नहीं | थोड़ा-सा | काफ़ी ज़्यादा | बहुत ज़्यादा |
|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ |

हस्ताक्षर.....तारीख़.....

माता/पिता/अन्य (कृपया लिख दें:)

हमारी मदद करने के लिए आपका बहुत-बहुत शुक्रिया