



## DEPRESSION IN CHILDREN WITH CHRONIC ILLNESS IN THE AGE GROUP 6 YEARS TO 18 YEARS: A CROSS-SECTIONAL STUDY

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### Abstract

**Background:** Over the last few years, the global prevalence of pediatric chronic disorders (PCD) has risen. Chronic medical disease is an undesirable burden for children, as it interferes with their typical activities, necessitates repeated hospitalizations, health care at home, or any extensive medical treatment, and hampers their growth and development. Understanding the relationship between chronic disease and depression disorders is becoming increasingly important for providing quality health care as chronic disease and depressive disorders are increasingly recognized as major health obstacles.

**Methods:** In this study titled “Depression in Children with Chronic Illness in The Age Group 6 Years To 18 Years: A Cross-Sectional Study”, was conducted over two years study period. According to all inclusion & exclusion criteria, 75 children were studied. The study was conducted in the department of pediatrics of a tertiary care hospital. Children suffering from the chronic disease were interviewed by the investigator personally & findings were noted in predesigned proforma. Data was collected using various questionnaires. Data were entered into Epidata software version 3.1 and analysed using Epidata Analysis software.

**Results:** The majority of children were from the 13.1 – 16 years age group. The majority of children were male (42 children, 56%) as compared to female children (33 children, 44%). After clinical analysis, we found that 57.33% (43 children) were depressed and were classified accordingly to the severity of depression. Among depressed children male to female ratio was 0.95:1 showing female preponderance in the prevalence of depression. Out of 43 depressed children, the most common age group among them was the adolescent age group of 15-18 years. The commonest illness was sickle cell disease (25 children, 33.33%), Haemophilia (23 children, 30.67%) & type 1 diabetes mellitus (9 children, 12%). Among 75 participants, as per the depression scale, clinical depression was noted in 30 children (40%) while 7 children had borderline depression (9.33%).

**Conclusion:** There is a complex combination of elements in childhood/adolescent depression, including sex hormones, psychosocial stresses, developmental factors, and hereditary traits, all of which play a role. There is an increased vulnerability to sadness, stress, and anxiety in children with chronic illnesses. If left untreated, childhood/adolescent depression has a detrimental impact on academic, cognitive, and social development, and can lead to serious consequences.

**Keywords:** Depression, Chronic Illness, Depression in Children

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## 1. INTRODUCTION

Chronic illnesses are those that have been present for at least 3–6 months and can only be managed, not cured, at this time.<sup>1</sup> Over the last few years, the global prevalence of paediatric chronic disorders (PCD) has risen. Chronic illnesses in children are defined by Van Cleave et al.<sup>4</sup> as "any physical, mental, or emotional condition that prevents the child from attending regular school, doing daily school assignments, participating in everyday childhood pursuits, activities that need frequent recognition/treatment from a health professional, constant use of medicines and/ any specialized equipment"

The chronic medical disease is an undesirable burden for children, as it interferes with their typical activities, necessitates repeated hospitalizations, health care at home, or any extensive medical treatment, and hampers their growth and development. The physical, emotional & behavioural comorbidities of children are disrupted by treatment and hospitalisation due to chronic illness. Neurosis, attention deficit hyperactivity disorder, misbehaviour, and school and adjustment difficulties are twice as likely in chronically ill children as they are in healthy children of the same age. If the sickness is caused by brain injury or there is a functional impairment, the chances of developing behavioural issues increase by more than a factor of two.<sup>5</sup>

Depression was one of the most frequent and limiting conditions worldwide, according to the WHO and World Bank's Global Burden of Disease Study.<sup>8</sup>

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Understanding the relationship between chronic disease and depression disorders is becoming increasingly important for providing quality health care as chronic disease and depressive disorders are increasingly recognized as major health obstacles. Depression has a key role in the origin, progression, and consequences of chronic disease.<sup>9</sup> Individuals' quality of life (QoL) is strongly linked to the QoL of others in their immediate environment, such as spouses or parents<sup>1</sup>

According to studies conducted in India, depression affects 6.3 percent to 12.5 percent of children with chronic conditions.<sup>12</sup> The Child Behavior Checklist (CBCL), which is used to estimate behavioural & emotional disorders in children and in adolescents, has been used in relatively few research in India to see the proportion of depression in children.

## 2. OBJECTIVES

Individuals' quality of life (QoL) is strongly linked to the QoL of others in their immediate environment, such as spouses or parents<sup>1</sup>. As a result, any chronic sickness might have a negative impact on a family's life

The financial cost of caring for a patient's family is one of the most significant responsibilities. Treatment fees, transportation to appointments, the cost of employing a caregiver, and modifying their living environment are all examples of this. Low-income families confront higher challenges in

obtaining funding since they frequently receive inadequate assistance and have more problems with social functioning and relationships.

Psychosocial difficulties, such as neurosis, attention deficit, and poor school adjustment, are significantly more likely in children with chronic disease or disability.

As a lack of data available on depression in children with chronic illness, the present study visions to study the prevalence of depression among children aged 6 to 18 years who have a chronic disease, using the Child Behavior Checklist (CBCL).

So, the objective is to find the proportion of depression in children with chronic illness in the age group of 6 years to 18 years using the Child Behavior Checklist (CBCL)

### 3. METHODS

It was a cross-sectional study conducted in the Department of Paediatrics in a tertiary care hospital. The study population was composed of Children aged 6 to 18 years who were confirmed with a chronic condition that persisted for more than 6 months. It was conducted from 1st November 2019 to 31st October 2021.

75 Sample size was determined considering the proportion of depression in chronic illness as the main outcome measure.

**INCLUSION CRITERIA** - All children in the age group of 6 years to 18 years with chronic illnesses of a duration of more than 6 months were included.

**EXCLUSION CRITERIA** - Not willing to participate.

The operational Definition was taken as

1. DSM-5 Criteria-5 or more symptoms during a 2-week period.
2. Chronic Illness- "A chronic illness or medical condition that has lasted six months or more, affecting a child's normal activities, and requires frequent hospitalizations, home health care and/or extensive medical care"

The method of measurement was the CBCL Score Sheet

The CBCL/6-18 consists of 113 questions, scored on a three-point scale- (0 for Not true, 1 for Somewhat or sometimes true, and 2 for Very true or often true.

Each scale score was interpreted based on the T Score and Percentile score

#### **Ethical statement**

Ethical clearance was obtained from an ethical review board NKPSIMS &LMH &Research Centre, Nagpur. The case file information was identified during data collection and was coded.

#### **Statistical techniques used:**

The obtained data will be statistically analysed by applying descriptive (Average, percentile, mean, standard deviation, p-value) of the significance of mean differences in terms of various variables. We will enter all data and further Statistical Analysis will be done with the help of STATA, version 10.1, which was used to code and analyse the data, which was entered in MS Excel.

### 4. RESULTS

**ASSOCIATION BETWEEN CHRONIC ILLNESS AND DEPRESSION-** In the present study, out of 75 children studied, after clinical analysis we found that majority of around 57.33% (43 children) were depressed and were grouped accordingly to the severity of depression. Rest 42.67% (32 children) showed no

signs of depression. On statistical comparison, the difference between depressed & not depressed was not significant. (TABLE 1)

TABLE1: ASSOCIATION BETWEEN CHRONIC ILLNESS AND DEPRESSION

<b>PARTICIPANTS</b>	<b>No. of participants (n = 75)</b>	<b>Percentage</b>
DEPRESSED	43	57.33
NOT DEPRESSED	32	42.67

(Independent t- test, p value – 0.05)

ASSOCIATION BETWEEN GENDER AND DEPRESSION-In the present study, out of 75 children studied after clinical analysis 43 children were depressed. Among those 43 children, the majority of children were female (22 children, 51.16%) as compared to male children (21 children, 48.84%). On statistical comparison, the difference between the male & female gender was not significant. (p-0.84) (TABLE 2)

TABLE 2: ASSOCIATION BETWEEN GENDER AND DEPRESSION

<b>GENDER</b>	<b>No. of participants (n = 75)</b>	<b>Percentage</b>
MALE	42	56
FEMALE	33	44

(Independent t- test, p value – 0.05,)

ASSOCIATION BETWEEN AGE AND DEPRESSION-

In the present study, out of 75 children studied, after clinical analysis 43 children were depressed. The most common age group among them was 15-18 years (18 children, 41.86%), followed by the age group of 11-14 years (16 children, 37.21%) followed by 6-8 years (9 children, 20.93%). The majority of participants about 41.86% of depressed children belonged to the adolescent age group (15 years-18 years). On statistical comparison, the adolescent age group (11 years - 18 years) had a significant association between age and chronic illness. (p-0.001) (TABLE 3)

TABLE 3: ASSOCIATION BETWEEN AGE AND DEPRESSION

<b>AGE GROUPS</b>	<b>No. of participants depressed</b>	<b>Percentage</b>
6 years - 10 years	9	20.93
11 years - 14 years	16	37.21
15 years - 18 years	18	41.86

(Percent's: (rows) - Chi<sup>2</sup> = 8.22 df (3) p = 0.001)

**ASSOCIATION BETWEEN TYPE OF CHRONIC ILLNESS AND DEPRESSION**

In the present study, among 75 participants sickle cell disease (25 children, 33.33%), Haemophilia (23 children, 30.67%) & type 1 diabetes mellites (9 children, 12%) were the most common chronic disease noted. Other chronic diseases were Asthma (9 children, 12%), rheumatic heart disease (2 children, 2.67%), Seizure disorder (6 children, 8%), Adrenal insufficiency (1 child, 1.33%), Thalassemia (1 child, 1.33%), Nephrotic syndrome (1 child, 1.33%), HLH (1 child, 1.33%), Sickle b thalassemia (1 child, 1.33%), chronic kidney disease (1 child, 1.33%) & optic neuritis (1 child, 1.33%). (TABLE 4)

**TABLE 4: ASSOCIATION BETWEEN TYPE OF CHRONIC ILLNESS AND DEPRESSION**

Chronic Illness	Participants (n=75)	Percentage	Depressed (n = 43)	Percentage
Sickle cell disease	25	33.33	16	37.21
Haemophilia	23	30.67	9	20.93
Type 1 diabetes mellites	9	12	7	16.28
RHD	2	2.67	2	4.65
Seizure disorder	6	8	4	9.3
Adrenal insufficiency	1	1.33	1	2.33
Asthma	3	4	1	2.33
Thalassemia	1	1.33	1	2.33
Nephrotic syndrome	1	1.33	1	2.33
HLH	1	1.33	1	2.33
Sickle b thalassemia	1	1.33	0	0
CKD	1	1.33	0	0
Optic neuritis	1	1.33	0	0
	75	100	43	100

**SEVERITY OF DEPRESSION-**

In the present study, among 75 participants, as per the depression scale, clinical depression was noted in the majority of about 30 children (40%) while 7 children had borderline depression (9.33%). No depression was noted in 38 children (50.67%) (TABLE 5)

**TABLE 5: SEVERITY OF DEPRESSION**

Severity of Depression	No. of participants (n = 75)	Percentage
NO DEPRESSION	38	50.67
BORDERLINE DEPRESSION	7	9.33
CLINICAL DEPRESSION	30	40.00

(Percent's: (column)  $\chi^2 = 2.135$  df (3) p = 0.54)

**Duration of Illness and Severity of Depression**

In the present study, among 75 participants, as per the depression scale, clinical depression was noted in 30 children (40%) while 7 children had borderline depression (9.33%). No depression was noted in 38 children (50.67%). No depression was commonly noted in children of less than 9 years duration of illness (44%) while clinical depression was common in children with more than 6 years of duration of illness (30.67%) (TABLE 6)

**TABLE 6: ASSOCIATION BETWEEN DURATION OF ILLNESS AND SEVERITY OF DEPRESSION**

<b>Duration of illness</b>	<b>MALE (%)</b>	<b>FEMALE (%)</b>	<b>Total (%)</b>
6 months - 1 year	3 (4%)	2 (2.67%)	5 (6.67%)
1.1 year - 3 years	6 (8%)	3 (4%)	9 (12%)
3.1 years - 6 years	12 (16%)	7 (9.33%)	19 (25.33%)
6.1 years - 9 years	10 (13.33%)	12 (16%)	22 (29.33%)
9.1 years - 11 years	4 (5.33%)	5 (6.67%)	9 (12%)
11.1 years -13 years	4 (5.33%)	2 (2.67%)	6 (8%)
13.1 years -16 years	3 (4%)	2 (2.67%)	5 (6.67%)
16.1 years - 18 years	0	0	0
	42 (56%)	33 (44%)	75

(Percent's: (rows) - Chi<sup>2</sup> = 7.92 df (3) p = 0.001)

**5. Discussion**

Depression is a significant and largely undiagnosed problem for children with chronic illnesses, necessitating a greater need for early detection and intervention. While infectious diseases have decreased in prevalence, many relatively rare ailments that had a high mortality rate in the mid-twentieth century have seen significant increases in survival rates. Several juvenile malignancies, sickle cell disease, spina bifida, congenital cardiac disease, cystic fibrosis, and, all of which have significant early-life mortality rates, have shown substantial declines in the last half-century. In 1960, leukemia, for example, was quickly fatal. Five-year survival rates now surpass 95%, and most of these other conditions have seen equally substantial improvements.<sup>13,14</sup> Depressive mood is linked to chronic ill-health in men and to some extent to exercise in women, according to evidence from studies across Europe. For males, social variables such as isolation, contact with family, and participation in faith or other community organizations are more important; for women, social factors such as isolation, contact with family, and engagement in faith or other community organizations are more important.<sup>15</sup> Chronic disease in children can disrupt households and have negative consequences for various family members' daily functioning and quality of life. In adulthood, the rising incidence of chronic diseases and under-treatment during childhood may result in lower life outcomes and increased reliance on public assistance programs.<sup>16</sup> Some of the common life experiences experienced by children with chronic conditions are Increased medical visits, hospitalization, medical emergencies, complicated situations, demanding drug regimens, days missing from school, and limited social involvement with classmates. Medical care for children with chronic illnesses such as chronic renal disease, asthma, hepatitis, and neurological conditions requires not

just technical expertise but also sensitivity to the needs of relatives.<sup>17</sup> While chronic sickness in children and adolescents increases the likelihood of emotional and behavioural problems, these problems can have a major influence on the illness and even mortality related to the physical illness.<sup>18</sup> Treatment adherence and outcomes are improved with early screening and management for depressive disorders, and associated morbidities may be reduced as well.

## 6. LIMITATIONS OF THE STUDY

Our Study involved a smaller sample size. So, a large population is required in the future to establish nonsignificant results.

**7. FINANCIAL SUPPORT AND SPONSORSHIP-** The authors have indicated they have no financial relationships relevant to this article to disclose.

**8. CONFLICT OF INTEREST-** The authors declare that they have no conflict of interest.

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