



## A RETROSPECTIVE STUDY ON CAUSES OF SHORT STATURE IN CHILDREN VISITING ENDOCRINE OPD AT KANTI CHILDREN'S HOSPITAL

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### ABSTRACT

**OBJECTIVES:** The causes of Short Stature in children are different in different countries, it can vary from endocrine to non-endocrine. This study was conducted to identify the causes of short stature in children who are brought in Endocrine OPD of

Kanti Children's Hospital. **METHOD:** This is a retrospective study done at Endocrine OPD of Kanti Children's Hospital at ten year duration between 2011/1/1 to 2021/1/30. One Hundred and Twenty five Children who were brought with chief complain of not gaining height were included. Children who were not brought with above mentioned complain are not included even found short stature later. **RESULTS:** Male and Female ratio was 1.2:1. The commonest cause seen was Familial Short Stature 41 (32.8%), Constitutional 22 (17.6%), Hypothyroidism 20 (8%), Syndromic 13 (10.4%), Skeletal Dysplasia 10 (8%), Malnutrition 10 (8%), Chronic Diseases 7 (5.6%) and Growth Hormone Deficiency 2 (1.6%). **CONCLUSION:** This study showed Physiological causes such as Familial and Constitutional short stature as leading cause of short stature. When found treatable cause it should be addressed as needed. Proper and timely monitoring and counselling to parents can relieve the stress and anxiety.

**KEY WORDS :** Short Stature, Familial Short Stature, Constitutional Short Stature

### INTRODUCTION

Short stature although common can be a challenging problem to deal with. Growth monitoring of children from birth till adulthood provides invaluable information towards diagnosis and management of a whole range of pediatric disorders. Growth monitoring can prevent loss in the adult height, which may occur if diagnosis is delayed. Under normal circumstances growth follows a certain pattern. Therefore it is very important to monitor growth of the child in regular basis. Although growth can be monitored in a simple standard growth chart every three to six months, it is an important and cost effective tool. A proper medical history, examination including proportionate and dysproportionate height and dysmorphic features with accurate growth chart plotting can give clues to diagnosis. Parents often bring their child with complain of short stature because they compare the height of the child with his/her peers at school. This can be misleading and needs to be confirmed by use of appropriate growth charts whether the child is short or not.

Short stature is defined by height or length below 3<sup>rd</sup> centile or less than 2 standard deviation for that specific age and sex. The causes of short stature can be broadly classified as Physiological and Pathological. Physiological causes such as Familial Short Stature and Constitutional Short Stature are common. Pathological causes include Undernutrition, Hypothyroidism, Syndromes, Skeletal Dysplasia and Underlying Chronic diseases.

Familial Short Stature is one of the commonest cause for short stature. In this condition mid-parental height (MPH) and bone age should be within normal range for age and sex.

MPH is calculated by - Boy's - (Father's height in cm + Mother's height in cm + 13)/2

Girl's - (Father's height in cm + Mother's height in cm - 13)/2  
Target range = MPH ± 6.5cm

If the height of the child falls within this range, it is considered normal.

### Patients and Methods

After obtaining approval from Institutional Review Committee (IRC) for research, the study was carried out. One hundred and twenty five patients with diagnosis of short stature aged from six months to

fourteen years were included. Among them 70 were males and 55 were females. Children who were brought with chief complain of not gaining height in endocrine OPD within duration of ten years from 2011/1/1-2021/1/31 were included. Children who were not brought with above mentioned chief complain even found short stature after examination in hospital later were excluded. Proper history, physical examination with growth chart plotting and laboratory examination; radiological examination whenever necessary were done.

### Ethical consideration

Before commencing data collection for this study, a proposal was submitted to IRC and ethical clearance was taken. The will of parents/children was fully respected and informed consent was taken after fully explaining all relevant details. Those who failed to provide consent were excluded.

### RESULTS:

Total 125 cases visiting in Endocrine OPD with chief complain of short stature during 2011 to 2021 were taken. The Male:Female ratio was 1.2:1

**Table 1. Total number of cases:**

S.N	Sex	No. of cases
1.	Male	70
2.	Female	55
3.	Total	125

**Table 2. Most of the causes found were Non Endocrine Causes for Short Stature:**

S.N	Causes	No.
1.	Physiological	63 (50.4%)
2.	Pathological	62 (49.6%)

**Table 3. Observed Causes for Short Stature were:**

S.N	Causes	No.
1.	Familial	41 (32.8%)
2.	Constitutional	22 (17.6%)
3.	Hypothyroidism	20 (16%)
4.	Syndromic	13 (10.4%)
5.	Malnutrition	10 (8%)
6.	Skeletal abnormality	10 (8%)
7.	Chronic diseases	7 (5.6%)
8.	Growth hormone deficiency	2 (1.6%)

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The commonest cause was physiological short stature. Among the syndromes, Five cases were Down's Syndrome, One case of Turner syndrome and Six cases were other unknown Syndromes. Among the Skeletal dysplasia Four cases were of Achondroplasia, One case of Morquio Syndrome(MPS IV) and Four cases were other Skeletal dysplasia. The Chronic cases were Congenital Heart Disease, End Stage Renal Disease, Antral Duodenitis, Hypokalaemic Periodic Paralysis, Abdominal Tuberculosis, Hodgkin's Disease, Nasopharyngeal Carcinoma one each.

#### DISCUSSION:

Short stature is a common cause for which children are brought to hospital. It has also been suggested that early stunting is associated with greater deficits in long-term outcomes than would be expected from the persistent short stature alone. Growth pattern of a child has been considered as a marker for overall general health of a child and having short stature may signify a serious illness as well. A study done at Saudi Arabia showed the commonest cause of short stature is genetic (familial) short stature and other variable were endocrine and nutritional causes. Among endocrine causes growth hormone deficiency was evident. Another study done at tertiary care hospital of Egypt also showed Growth hormone deficiency as Endocrine cause of short stature and normal variant of growth as other causes such as familial short stature and constitutional growth delay and in some celiac disease. A study conducted at India showed that the commonest cause of short stature in general OPD was Protein Energy Malnutrition, Chronic Systemic Disease, Chronic Anemia, Skeletal Disorder, Constitutional Short Stature, Endocrine disorders, Intrauterine Growth Retardation, Chromosomal disorders and others in sequence. Same Hospital the causes of short stature at endocrine OPD was Growth hormone deficiency followed by Hypothyroidism, Malnutrition and Chronic diseases. A study conducted at tertiary Care Hospital of Pakistan showed most common cause of Short Stature as Constitutional growth delay and familial short stature. Endocrine causes were Hypothyroidism, Growth Hormone deficiency and Celiac disease. A study done by Muhammad Waqar Rabbani et al in Pakistan showed commonest cause for short stature is Genetic (Familial) followed by Hypothyroidism, Growth Hormone Deficiency, Insulin Dependent Diabetes Mellitus, Constitutional delay, Malnutrition, Celiac Disease, Turner Syndrome and Unknown Syndrome respectively.

A survey done by Ministry of Health Nepal in 2017 showed the prevalence of stunting and underweight among children under age 5 years have markedly decreased. Due to different and better policy of Government of Nepal Malnutrition as leading cause for Short Stature has been declining.

#### CONCLUSION

Short Stature is one of the cause for which children are brought to Endocrine OPD. Identifying the cause and intervening timely can have great impact in adult height. Even the cause been Physiological, counselling can be a great help to family members and child.

In most of the studies the commonest cause of short stature is Familial. Our study also showed the same scenario, Fifty percent of causes were Physiological. Studies done outside showed Growth Hormone Deficiency as one of the cause for Short Stature. Due to Financial Constraints not everyone visiting our Hospital were willing to do this test; that may be a reason this study had low percentage of Growth Hormone Deficiency as a cause for Short Stature. In Future further elaborate study can help us identify what is the percentage of Growth Hormone Deficiency in our child.

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