



## GROWTH HORMONE THERAPY IN CHILDREN WITH DWARFISM AT A TERTIARY CARE HOSPITAL, THIRUVALLUR

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**ABSTRACT** **Background:** Growth Hormone deficiency causes more than 9% of the short stature among children. Growth hormone (GH) therapy to children with short stature not only increase their height but also self-confidence among them. Growth hormone is administered free of cost at the District Early Intervention Centres to promote growth for the needed children. **Objective:** To find out the changes in anthropometry among children on Growth hormone therapy and challenges in GH administration at the Tertiary care Hospital, Thiruvallur. **Methodology:** A hospital based longitudinal study was conducted among children (n=25) with short stature who were referred by RBSK team and from other health centres for growth hormone therapy. All were started growth hormone as per standard protocol and followed up longitudinally for 2 years (2020 to 2022) after obtaining the consent from the parents. The changes in anthropometric measurements were collected, analyzed statistically and the challenges faced were studied.

### Results:

- Out of 25 children, 10(40%) were girls and 15(60%) were boys and 50% of them were above 10 years old.
- There was a significant increase in height and weight ( $p < .001$ ) in all the children.
- Challenges in therapy were – Compliance, some investigations needed in private lab, Limited availability of the super specialists at the District level.

**Conclusion:** The study clearly showed an increase in the height and weight of the children and also self confidence among them and satisfaction in parents. Minor challenges has to be rectified in order to provide a uninterrupted services for the well being of the future generation.

**KEYWORDS :** GH therapy, dwarfism, DEIC, challenges

### INTRODUCTION

Growth Hormone (GH) is synthesized and secreted by anterior pituitary cells called somatotrophs, which release between one and two milligrams of the hormone daily. Growth Hormone is essential for the normal physical and Mental growth of children. GH levels rise progressively during childhood and peak during the growth spurt that occurs during puberty. In biochemical terms, GH stimulates protein synthesis and increases fat breakdown to provide the energy necessary for tissue growth. GH deficiency is the main cause of dwarfism and short stature [1,2]. It may be primarily from damage to the hypothalamus or to the pituitary gland during fetal development (congenital GH deficiency) or following birth (acquired GH deficiency). Short stature and GH deficiency are often found in children diagnosed with psychosocial dwarfism, which results from severe emotional deprivation. The prevalence of Growth Hormone Deficiency (GHD) among children with short stature is estimated to vary between 2.8% and 69%, and is predicted to be much higher in children following postneurosurgical interventions [3]. With physical appearance being one of the factor influencing confidence among children, a way to treat Growth hormone deficiency is administration of Injectable Growth Hormones. Growth hormone is administered free of cost to the needed children at all district level Government Hospitals under RBSK. In a developing country like ours, there is also lack of awareness and delay in diagnosis due to unavailability of hormonal tests and proper follow-up. There is also frequent discontinuation of treatment due to the high cost and need for prolonged therapy to measure the final outcome, in terms of difference in predicted adult height and final height. This study was planned to find out the anthropometric changes among them and to find out the challenges by following them up in getting this benefit.

### METHODOLOGY

**Study Design :** Hospital based longitudinal study

**Study Population:** All children diagnosed with Growth Hormone deficiency (n=25) referred by the RBSK Team. Children with other causes of short stature and those who were not willing were excluded.

**Study Area:** District Early Intervention centre in the Tertiary Care Hospital, Thiruvallur

### Data Collection

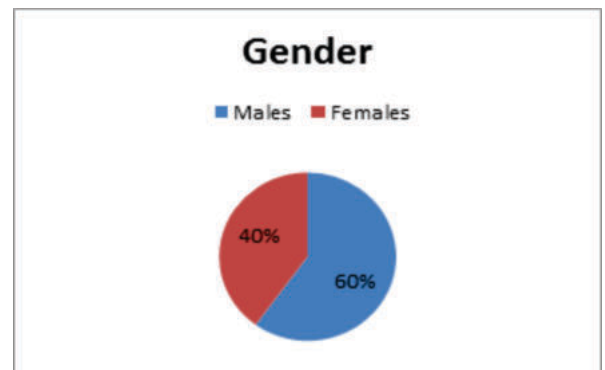
Children identified with dwarfism are further evaluated and after obtaining the Endocrinologist opinion, they were administered Injections of Growth hormone after obtaining the consent from their parents. Anthropometric measurements are taken during Hospital visits at regular intervals and any difficulties are studied for a period of 2 years.

### Analysis

The data obtained were analysed using SPSS-21 version for frequency distribution and test of significance was done by Student 't' test

### RESULTS

- Number of children enrolled for the study were 25.
- More than 50% of them were above 10 years of age.
- Mean age 11.82 yrs with SD  $\pm$  3.43 yrs
- Of these 10 were girls and 15 were boys.



**Fig: 1: Gender Distribution**

- Mean Height before starting treatment was 118.3 cms (SD  $\pm$  16.16 cms)
- Mean Height after treatment was 126.7 cms (SD  $\pm$  18.88 cms)
- There was a significant increase in the height with p value ( $< .01$ ) following growth hormone administration.

- Mean weight before starting treatment was 26.41kg (SD  $\pm$  11.47kg)
- Mean weight after treatment was 32 kg (SD  $\pm$  13.78 kg)
- There was a significant increase in the weight with p value (= .01) following treatment.

The parents were interviewed after obtaining their consent with the semi structured questionnaire for the difficulties they face during treatment and follow-up. The challenges faced were:

1. Transportation problems as some of them have to travel a long distance for the medication
2. Some of the investigations were needed privately
3. Super speciality services are available only in limited hospitals.

## DISCUSSION

Children with GH deficiency respond well to injections of recombinant GH, often achieving near-normal height and weight. The present study presents the data of 25 children, who got growth hormone treatment without interruption for atleast two years. Data on such therapy is sparse in Indian literature due to the high cost and lack of easy availability. Though it is provided free of cost in the District Government Hospitals, some of the difficulties faced shall be rectified for the demand of the poor people.

The most common indication for GHT in the present study was primary IGHD. This is in accordance with most of the studies on growth hormone, where most common indication for growth hormone therapy is IGHD [4,5]. Numbers of boys receiving treatment were 15 compared to 10 girls. This is similar to the study conducted in India wherein the number of boys receiving treatment were more [3]. This may be due to the concern of the parents for the male children rather than the girl children.

## CONCLUSION

The study done among 25 children with dwarfism receiving Growth hormone clearly showed an increase in their height and weight if they were administered regularly and followed up at frequent intervals. The challenges in administering has to be counseled for the betterment of future generation.

## Summary

The study done among 25 children with dwarfism receiving Growth hormone clearly showed an increase in their height and weight if they were administered regularly and followed up at frequent intervals.

The challenges faced were:

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2. Some of the investigations were needed privately
3. Super speciality services are available only in limited hospitals.

**Ethical Clearance:** Obtained

**Conflict of Interest:** Nil

**Funding :** Nil

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