

## ORIGINAL ARTICLE

## Incidence of Celiac Disease in Children with Down's Syndrome

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## ABSTRACT

**Aim:** Incidence of celiac disease among children with down's syndrome**Setting:** Pediatrics department, Khyber Teaching Hospital, Peshawar**Study design:** Cross sectional study**Study duration:** 20/7/2019 to 20/1/2020**Methodology:** A total of 241 subjects were selected. Five ml of venous blood was obtained from all patients to detect the Anti-tTG Ab. Among those patients who are positive for the antibody, endoscopy and biopsy specimen from duodenum were sent to hospital laboratory to confirm the presence of villus atrophy.**Results:** Mean age was  $8 \pm 4.57$ . 44% children were male and 56% children were female. More over 4% children had celiac disease and 96% children didn't have celiac disease.**Conclusion:** The frequency of celiac disease was 4% among children presenting with Down syndrome.**Keywords:** Celiac disease, Down's syndrome.

## INTRODUCTION

Down's syndrome is one of the most common viable genetic disorder, caused by trisomy of chromosome 21, with mental and physical developmental abnormalities.<sup>1</sup> The incidence of Down syndrome is 1 to 2 per 1000 live births<sup>2,3</sup>.

## METHODOLOGY

This cross sectional study was conducted in Paediatric Medicine Department, KTH, Peshawar for a period of six months from 20/7/2019 to 20/1/2020. Sample size was 241 keeping 6% proportion of celiac disease among children with Down syndrome, 95% confidence level and 3% margin of error using WHO sample size calculator. Sampling Technique used was consecutive non-probability sampling

**Inclusion Criteria:** All children with Down's syndrome with duration of less than one month and age group 2-15 years with either gender.

**Exclusion criteria:** Already diagnosed cases of celiac disease on history and medical records and patients with dysmorphic features other than Down's syndrome.

**Data collection procedure:** The study was conducted after approval from hospital ethical committee. All patients fulfilling the inclusion criteria were enrolled in the study through OPD. The purpose and benefits of the study was explained to all guardians of the patients and a written informed consent was obtained. All patients were subjected to detailed history and clinical examination. 5cc of venous blood was obtained from all patients and were sent to hospital laboratory to detect the Anti-tTG Ab. Among those patients who are positive for the antibody, were further sent for endoscopy and biopsy specimen from duodenum were sent to hospital laboratory to confirm the presence of villus atrophy.

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## RESULTS

Table 1: Age distribution

Age (yrs)	n	%age
2-8	164	68
9-15	77	32
Total	241	100

Table 2: Duration of disease

Duration	n	%age
< 15 days	159	66
>15 days	82	34
Total	241	100

Mean  $\pm$  SD of disease duration=  $15 \pm 5.1$ 

Table 3: Genetic susceptibility

Genetic Susceptibility	n	%age
Yes	12	5
No	229	95
Total	241	100

Table 4: Celiac disease

Celiac disease	n	%age
Yes	10	4%
No	231	96%
Total	241	100%

Table 5: Stratification of celiac disease WRT genetic susceptibility

Celiac disease	Yes	No	Total
Yes	4	6	10
No	8	223	231
Total	12	229	241

Chi square test= P value = 1.989

## DISCUSSION

Forty four percent children, in this study, were males and females 56%. 4% cases had celiac disease and 96% didn't have celiac disease. These results are in favor of the study conducted by Al Ruwaily F et al<sup>4</sup>. In another study by Yang Du et al<sup>5</sup> showed incidence of CD 5.8 % in patients with

Down syndrome and results were consistent with our results. In other studies in Europe and America, the prevalence of celiac disease is 6% (21 studies) and 5.7% (6 studies) in DS patients, respectively. Same incidence of CD among DS patients was found in the United States i.e. 3.8% and 10.3%<sup>6,7</sup>, Australia 3.9%<sup>8</sup>, Argentina about 3.6%<sup>9</sup> and Brazil 5.6%<sup>10</sup>.

Same results were seen in a study by Zachor DA et al<sup>11</sup> in which 13% (10/75) cases were positive for anti endomysium antibodies. Half of these patients were also positive for antigliadin antibodies. Six of ten patient's positive for anti endomysium antibodies underwent intestinal biopsy.

## CONCLUSION

Our study concludes that the frequency of celiac disease was 4% among children presenting with Down syndrome.

**Conflict of interest:** Nil

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