ABSTRACT... Objective: To determine the frequency of psychosocial impairment in patients with celiac disease. Study Design: Descriptive Cross Sectional study. Setting: Children Hospital Complex and Institute of Child Health, (CHICH) Multan. Period: August 2019 to August 2020. Material & Methods: A total number of 177 patients having age 4-16 years with diagnosis of CD were included in this study. In children with CD depressive illness were assessed by using Pediatric symptoms checklist (PSC) form and this PSC form was filled by asking questions from parents then filling of form by doctor. Outcome variable was calculated on the basis of Pediatric symptoms checklist (PSC), whether patient has psychosocial illness or not. Results: Mean age of patients was 8.91±3.50 years. Mean duration of celiac disease of patients was 4.27±2.00 months. There were 135 (76.27%) female patients and 42 (23.73%) male patients. Mean serum anti-tissue transglutaminase IgA (tTG-IgA) level of patients was 122.73±24.31 µg/ml. The socioeconomic status of 115 (64.97%) patients was poor, 31 (17.51%) was middle, 18 (10.17%) patient was upper middle and 13 (7.34%) patients was high. Psychosocial illness was present in 35 (19.77%) patients. Conclusion: Psychosocial illness was diagnosed in 19.77% children having CD. So the children with celiac disease should be monitored for symptoms of anxiety and depression and a thorough counselling of the children to reduce the risk of psychosocial illness.

Key words: Celiac Disease, Psychosocial Illness, Growth Retardation.
together the score for each item. A cutoff score of 28 or higher indicates psychological impairment for children and adolescents ages 6 through 16, While 24 or higher is significant. For 4 and 5 years. If four or more items left blank (0-score), the questionnaire is considered invalid.\textsuperscript{11,12}

Aim of my research was to know the prevalence of psychosocial impairment in children with CD, as No study about this problem has been done in Pakistan. CD patients faced more physical, and psychosocial stress as compared to healthy children\textsuperscript{12}, so management of this aspect must be started immediately to decrease the burden on family.

**MATERIAL & METHODS**

This Cross sectional study was done in Developmental pediatric department with collaboration of Gastroenterology department of CHICH Multan from August-2019 to August 2020. A total 177 children diagnosed as CD, 4-6 years of age, of both gender was included in this study. Sample size was calculated by using Non probability consecutive sampling (By taking the prevalence of depressive illness 65.67% by \textsuperscript{10}Rubio-Tapia, margin of error 7%, confidence level 95%). The children with parental refusal, serum anti-tissue transglutaminase IgA (tTG-IgA) level with less than 50 µg/ml, Depressive illness in the family (parents and siblings), any congenital anomaly like congenital heart defect. (Detected on Physical examination and appropriate investigations), and any other chronic illness like Tuberculosis (detected by history, examination or chest x-ray if needed) were excluded from the study.

Parents/guardian were detailed about the study and prior written consent was taken. The study was approved by institutional ethical committee (34/07/Ethical/CH&ICH Multan). No conflict of interest was involved in this study. No financial support was provided by the institution or pharmaceutical company. A detailed history was taken from parents/guardian and patients. Patients with celiac disease were recruited from the Gastroenterology OPD and admitted children in ward according to the inclusion criteria. An informed consent was taken from the parents or guardian of patients after explaining nature of study, treatment and for using their data only for study. In patients celiac disease was diagnosed by tTG-IgA level. Socioeconomical status and Duration of illness was noted. Socioeconomical status was labelled on monthly income [(Poor (≤20000/month), Middle (>20000-40000/month), Upper Middle (>40000-60000/month), High (≥60000).

In patients with celiac disease depressive illness were assessed according to Pediatric symptoms checklist (PSC) form and this PSC form was filled by asking questions from parents then filling of form by doctor. This checklist facilitates the recognition of cognitive, emotional and behavioral problems.

Outcome variable on the basis of Pediatric symptoms checklist (PSC) was whether patient has psychosocial illness or not. All this information was collected and recorded on a predefined Performa. Due autonomy, beneficence, confidentiality and non-maleficence was ensured to the patients.

All the collected data was analyzed through SPSS version 16.0. Quantitative variables like age, duration of celiac disease, serum tTG-IgA level and Pediatric Symptom Checklist score was presented as mean and standard deviation. Qualitative variables like gender, socioeconomic status and psychosocial illness of the patient were presented in frequency and percentage. Effect modifier like age, gender, duration of celiac disease, Pediatric Symptom Checklist score, socioeconomic status and psychosocial illness of the patient were dealt through stratification. Chi square was applied to find p value, which is considered significant if ≤0.05.

**RESULTS**

Mean age of patients included in this study was 8.91 ± 3.50 years. Mean duration of celiac disease of patients was 4.27 ± 2.00 months. Mean serum anti-tissue transglutaminase IgA (tTG-IgA) level of patients was 122.73 ± 24.31 µg/ml. (Table-I).
There were more females as compared to the males. There were 135 (76.27%) female patients and 42 (23.73%) male patients. On frequency of socioeconomic status, the socioeconomic status of 115 (64.97%) patients were poor, 31 (17.51%) was middle, 18 (10.17%) patient was upper middle and 13 (7.34%) patients were high. Psychosocial illness was present in 35 (19.77%) patients versus it was found absent in 142 (80.23%) patients (Table-II).

Stratification of age, gender, duration of celiac disease and socioeconomical status was performed, this difference of all was statistically insignificant, p-value of 0.883, 0.232, 0.770 and 0.469 respectfully. (Table-III)

| Variable                  | Mean±S.D   | Minimum | Maximum |
|---------------------------|------------|---------|---------|
| Age (years)               | 8.91±3.50  | 04      | 16      |
| Duration of celiac disease(months) | 4.27±2.00  | 01      | 11      |
| Serum anti tissue transglutaminase IgA level(ug/ml) | 122.73±24.31 | 90      | 250     |

Table-I. Descriptive statistics of quantitative variables.

| Variable                  | N %       |
|---------------------------|-----------|
| Gender                    |           |
| Male                      | 42 23.73  |
| Female                    | 135 76.27 |
| Socioeconomic status      |           |
| Poor                      | 115 64.9  |
| Middle                    | 31 17.5   |
| Upper Middle              | 18 10.17  |
| High                      | 13 7.34   |
| Psychosocial illness      |           |
| Present                   | 35 19.77  |
| Absent                    | 142 80.23 |

Table-II. Frequency of qualitative variables.

In present study we determined the frequency of psychological disorders in children with diagnosis of CD. In present study, psychological illness was diagnosed in 19.77% patients of CD. Some case control and case series studies done by gastroenterologists described the depression as a symptom of CD. While the level of depression in CDs depends upon good medical management and strict dietary restriction is still under debate. Cohort study done by Ludvigsson JF and another by Siniscalchi M determined more depression in CDs compared to controls of the general population, while Garud Sothers at USA found no difference. Similarly anxiety is reported as a common manifestation of CD patients by some researchers in case control studies, while some did not. In Italy and Scandinavia the CD children are found to be more prone for psychiatric disorders.

We did not find any significant difference in the frequency of psychosocial illness in male and female patients. Similarly, study done in Italy, anxiety and depression is found to be not related to gender. While a study done in Scandinavian reported lower levels of psychosocial impairment.
in female CD patients.\textsuperscript{23}

We also did not find any significant association between the duration of CD and psychosocial illness which is similar to the studies done in Italy.\textsuperscript{19,22} we found no significant association of duration of disease with psychosocial illness.

There are some limitations for this study, it was a cross-sectional study, and we did not take healthy controls and compared the frequency of psychosocial impairment in healthy controls of similar age. So there is a need to conduct a large multicenter case control study in our population to determine the exact prevalence of psychosocial illness in CD patients.

**CONCLUSION**

Psychosocial illness is very common in children with CD. So the children with CD should be assessed periodically for symptoms of anxiety and depression and early counselling and psychotherapy of the children must be done to reduce the burden caused by psychosocial illness in the family.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

| Sr. # | Author(s) Full Name           | Contribution to the paper                                                                                                                                                                                                 | Author(s) Signature |
|-------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 1     | Erum Afzal                   | Literature search, Results, Discussion, Final approval.                                                                                                                                                                     |                     |
| 2     | Aslam Sheikh                 | Literature search, study design, data interpretation of final approval.                                                                                                                                                   |                     |
| 3     | Ghazi Khan Khosa             | Introduction, Results data, Interpretation of final approval.                                                                                                                                                             |                     |
| 4     | Komal Noor                   | Literature search, Discussion of final approval.                                                                                                                                                                            |                     |