Original Research Article

# Epidemiological study of gastroesophageal reflux disease (GERD) in children aged 8-12 years of Darbhanga

Ashok Kumar*, Mani Shankar**

*,**Associate Professor, Department of Pediatrics, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, INDIA.
**Email:** drmshankar@gmail.com

## Abstract

**Objective:** To assess the prevalence GERD symptoms and influence of diet habits, drugs and living pattern on it. **Design:** Unbiased and unmarked randomized trial. **Participants:** 5954 children between 8-12 years attending OPD of Pediatrics Dept. of Darbhanga Medical College & Hospital, Darbhanga (Bihar) from January 2017 to December 2018. **Measures:** Complete history was filled with the help of Gastro esophageal reflux questionnaire I-R for every selected child. **Result:** The incidence of GERD among children attending OPD was high during summer and rainy season (6.62%) then during winter season(3.50%) ($p<0.001$). Many children with GERD had combination of symptoms. Among those most frequent was dislike food after taking small amount of meal (66.5%), another problems were chest pain or burning in chest or heaviness of chest (51.5%) and sour eructation or water brush (18.9%). More than one food were associated for GERD in many children, fried food for 51.8% cases, highly spicy preparations for 64.6% cases and street foods for 29.6% cases. **Conclusion:** Taking an account of food habits and living pattern to prevent GERD may be helpful in preventing widely prevalent under nutrition in this locality.

**Key Words:** Children, GERD, Spicy food.

**Address for Correspondence:**
Dr. Mani Shankar, Associate Professor, Department of Pediatrics, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, INDIA.
**Email:** drmshankar@gmail.com
Received Date: 10/08/2019 Revised Date: 20/09/2019 Accepted Date: 18/10/2019
DOI: https://doi.org/10.26611/10141212

| Access this article online | |
|---|---|
| Quick Response Code: | Website: www.medpulse.in |
| | Accessed Date: 21 October 2019 |

## INTRODUCTION

Gastroesophageal reflux disease (GERD) is a symptomatic clinical condition or change in tissue structure results from reflux of stomach or duodenal content into esophagus[1]. Common symptom of GERD are chest pain or heart burn, recurrent regurgitation or water brush, food refusal or anorexia leading to weight loss or poor weight gain, and persistent cough or hoarse voice. A detail history and physical examination are generally sufficient to establish the diagnosis of GERD[2,4]. Children of Darbhanga have different economic and cultural back grounds, and their dietary and living patterns are much different from other parts of country. Changing living style has lead to increased consumption of readymade fried foods, foods with additives and chemicals, chocolates and beverages. There is growing incidence opf consumption of "Gutakha" and other "Pan-Masala" in this locality. All these can promote GERD[3].

## OBJECTIVES

1. To assess the prevalence of GERD symptom among children aged 8-12 years around Darbhanga.
2. To explore potential risk factors of GERD.
3. To study influence of diet, habits, drugs, living pattern on the GERD.

## MATERIAL AND METHODS

Cases selected were children between 8 to 12 years of age attending Pediatrics OPD on the two selected week days

How to cite this article: Ashok Kumar, Mani Shankar. Epidemiological study of gastroesophageal reflux disease (GERD) in children aged 8-12 years of Darbhanga. *MedPulse International Journal of Pediatrics.* October 2019; 12(1): 04-07.
http://medpulse.in/Pediatrics/index.php

from January 2017 to December 2018 with any or combination of the following problems –

- Chest pain or heart burn
- Disinclination or refusal of meal leading to poor weight gain or weight loss.
- Regurgitation or vomiting after taking meal.
- Coughing or wheezing or hoarseness of voice after taking meal.

The initial evaluation aims t6o identify the pertinent positives in support of GERD and the negatives that makes other diagnosis unlikely. A format made with the help of Gastroesophageal reflux questionnaires I-R. Complete history was filled for every selected child including dietary habit of taking spicy, fried or street food. Also recorded the detail account of consumption of "Gutakha" or other "Pan-Masala", foods with additives, beverages, tea-coffee, drinking water, personal hygiene and family income. In older children (>8 years who can give proper history) history and physical examinations are most important and the only steps in most cases of GERD[4].

## OBSERVATION

**Table1:** Showing Clinical GERD Cases among Children (8-12 yrs.) attending OPD (Jan. 2017 to Dec. 2018)

| Month | Children (8-12 yrs.) attending OPD | | | Children (8-12 yrs.) Clinical with GERD | | | Percentage of Clinical GERD | | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| January | 156 | 137 | 293 | 5 | 4 | 9 | 3.2 | 2.9 | 3.1 |
| February | 155 | 143 | 298 | 6 | 5 | 11 | 3.9 | 3.5 | 3.7 |
| March | 176 | 157 | 333 | 9 | 7 | 16 | 5.1 | 4.4 | 4.8 |
| April | 191 | 166 | 357 | 11 | 9 | 20 | 5.8 | 5.4 | 5.6 |
| May | 296 | 253 | 549 | 19 | 14 | 33 | 6.4 | 5.5 | 6.0 |
| June | 303 | 260 | 563 | 22 | 19 | 41 | 7.3 | 7.3 | 7.3 |
| July | 351 | 328 | 679 | 24 | 18 | 42 | 6.8 | 5.5 | 6.2 |
| August | 355 | 347 | 702 | 27 | 22 | 49 | 7.6 | 6.3 | 7.0 |
| September | 348 | 330 | 678 | 24 | 21 | 45 | 6.9 | 6.4 | 6.6 |
| October | 327 | 311 | 638 | 17 | 14 | 31 | 5.2 | 4.5 | 4.9 |
| November | 242 | 224 | 466 | 9 | 9 | 18 | 3.7 | 4.0 | 3.9 |
| December | 207 | 191 | 398 | 7 | 6 | 13 | 3.4 | 3.1 | 3.8 |
| **Total** | **3107** | **2847** | **5954** | **180** | **148** | **328** | **5.8** | **5.2** | **5.5** |

**Table 2:** Age wise Distribution of GERD Cases (8-12 years Children)

| Age Group | No. of Children attending OPD | No. of GERD Children | Percentage |
|---|---|---|---|
| 8 years | 1267 | 50 | 3.9 |
| 9 years | 1413 | 69 | 4.9 |
| 10 years | 1210 | 68 | 5.6 |
| 11 years | 1055 | 71 | 6.7 |
| 12 years | 1009 | 70 | 6.9 |
| | 5954 | 328 | 5.5 |

**Table 3:** Presenting Symptom among GERD Children (8-12 years)

| Age Group | No. of GERD Children | Presenting Symptom | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Chest pain/ Hoarseness of chest/ Burning in chest | | Not using food after taking smell | | Sour eructation or water brush | | Coughing/ wheezing/ Hoarseness voice | |
| | | No. | % | No. | % | No. | % | No. | % |
| 8years | 50 | 10 | 20.0 | 33 | 66.0 | 5 | 10.0 | 7 | 14 |
| 9years | 69 | 17 | 24.6 | 40 | 44.4 | 13 | 18.8 | 4 | 5.8 |
| 10years | 68 | 30 | 44.1 | 42 | 61.8 | 11 | 16.2 | 3 | 4.4 |
| 11years | 71 | 54 | 76.1 | 49 | 69.0 | 15 | 21.2 | 2 | 2.8 |
| 12years | 70 | 58 | 82.8 | 54 | 77.1 | 18 | 25.2 | 3 | 4.3 |
| **Total** | **328** | **169** | **51.5** | **218** | **66.5** | **62** | **18.9** | **19** | **5.8** |

**Table 4:** Pattern of Food and Life Style in GERD Children

| Food taken (more than three times a week) | No. of GERD Children | Percentage |
|---|---|---|
| 1. Fried food (like Pakori, Samosa, Burger etc.) | 170 | 51.8 |
| 2. Highly spicy veg. or Non-veg. home made preparation | 212 | 64.6 |
| 3. Street food like Chaomin, noodles, panipuri, bhuja, bread pakora etc. | 97 | 29.6 |
| 4. Home made plain rice/ dal/ vegetables or Biscuits/ Sattu etc. | 04 | 01.2 |
| 5. Taking Gutkha/ Pan-Masala/ Bhang/ Mouth freshness | 48 | 14.6 |
| 6. Slum housing and unhygienic living | 98 | 29.9 |
| 7. Going to sleep at late night | 08 | 2.4 |

## DISCUSSION

Children from large surrounding area comes to this hospital from treatment. Number of children (8-12 years) attended OPD during study period were 5954 (Male 3107 and female 2847, ratio 1.091:1.000). Male out numbered females as a general trend of OPD attendance. Among them, 328 (5.5 percent) children had GERD. Studies conducted at different part of world are variable and did not represent this locality. In a study in China 5.77% population. In USA, 1.8 percent children between 3 to 9 years age group and 3.5% in the 10 to 17 years age group had pyrosis or heart burn. The prevalence of GERD slowly increases with age during childhood[4]. In other part of India 3.8% children had dysphagia[6]. In this study GERD was more common in male than female children (Ratio 1.22:1.00). This male predominance was due to their higher association with disease promoting factors like consuming street food, "Gutkha" or Pan Masala etc. Seasonal variation of the disease was observed in this study. During summer and rainy season (May to August), the number of GERD children was 165 (6.62% OPD attendance), while in winter season (November to February) it was 51 (3.50% of OPD attendance). This higher incidence of GERD in summer and rainy season is statistically significant ($p<0.001$). This high incidence was due to more chance of gastrointestinal upset, food contamination and night sleep deprivation during the season. The percentage of GERD children increased with increasing age and for children of 12 years it was 6.9%. as children of higher age enjoy more freedom, so they are accessible to fried foods, street foods, "Gutakha" or Pan Masala and thus more often GERD. Association of different symptoms of GERD had been studied in different countries[5,7,8]. Features of the disease are dependent on many local factors, so their pattern in the present study are different from those studies. Many of the GERD children had combination of symptoms. Not liking fodd after taking small amount of meal was most frequent (66.5 percent) chest pain or buring in the chest or heaviness of the chest was another common problem (51.5 percent). Sour eructation or water brush was present in 18.9 percent cases, while coughing or wheezing or hoarse voice was not so frequent problem (5.8 percent). GERD has strong association with food consumed. Fried or spicy or street foods are liked by children of this area and feel hounored when get it but, these foods promotes GERD symptoms. Bland diet like rice-dal, milk-roti, Biscuits, "sattu" etc are least often related to GERD symptoms. Slum housing and unhygienic living are associated with G.I. infections and often leads to GERD. In USA and other countries, going to sleep at late night is often related to GERD[9] but, in this region this is not a common behaviour of children. In the present study, among GERD children, fried food like "Pakora", "Samosa" or burger were associated with 51.8% cases, highly spicy vegetarian or non-vegetarian preparations were eaten by 64.6 percent cases. Other foods related to GERD symptoms were street foods like "Chaumin", "Momo", "Noodles", "Panipuri", "Bhuija" or "bread rolls" in 29.6 percent cases. Many GERD children had more than one food association.

## CONCLUSION

Symptoms of GERD often leads to less food consumption and thus under nutrition among children of this region. Taking an account of food habbits and living pattern to prevent GERD, may be helpful in preventing widely prevalent under nutrition as well as it may decrease the future complications of GERD like esophageal stricture, Barett's esophagus and pulmonary complications.

## REFERENCES


1. Klinkenburg – Knol E, Castel DO : Clinical spectrum and diagnosis of gastroesophageal reflux disease. In : Castel DO, editor : The esophagus Boston : Little, Brown 2017.
2. Pediatric gastroesophageal reflux clinical Practice Guidelines : Joint recommendations of NASPGHAN and ESPGHAN. J. Pediatric Gastroe4nterol. Nutr. 2009;49:498-547.
3. Seema Khan and Susan R. Orenstein : Gastroesophageal Reflux Disease : Nelson Text Book of Pediatrics 2016 : Pages 1787-1790.
4. Ujjal Poddar : Diagnosis and management of gastroesophageal reflux diseases (GERD) : An Indian Pediatrics 2013; 50 : 119-126.
5. Pan GZ, XUGH, Guo HP, Ke MY, Han SM, Li ZS *et al*. An epidemiological study on symptomatic GERD in Beijing and Shanghai Chin J Dig. 1999, 19, 223-6.

6. De S, Rajeshwari K, Kalra Kk, Gondal R, Malhotra V, Mittal S.K. : Gastroesophageal reflux in infants and children in North India. Frop. Gastroenterol 2011; 22: 99-102.
7. Maishu Chan, Lishou Xiong, Huixin Chen, Angao XU, Longjun He and Pinjin Hu. Prevalence risk factors and impact of gastroesophageal reflux disease symptom. A population based study in South China, Scandinavian Journal of Gastroenterology 2015, 40:759-767.
8. Philip M Sherman, Eris Hassab *et al* : A global evidence based concusseson the definition of gastroesophageal reflux disease in pediatric population : The American Journal of Gastroentrology 104(5): 1278-2009.
9. Johnson R, Bernersen B, Stayme B, Forde OH, Bostad L, Burhol PG. Prevalence of endoscopic and histological findings in subjects with and without dyspepsia. Br. Med. J 1991; 302: 749-752.

Source of Support: None Declared
Conflict of Interest: None Declared