

**Functional Pain Abdomen in Children: Epidemiology and Etiopathology abstract**

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**Abstract**

**Background:** Chronic abdominal pain is one of the most common problems dealt in day to day practice by paediatricians.

**Methods:** Hospital based prospective case control study conducted on children aged 5 to 15 years in routine OPD and indoor patient fulfilling the inclusion criteria.

**Results:** According to clinical symptoms and investigations, 82(54.67%) children had symptoms suggestive of IBS, 37 (24.67%) children had Dyspepsia, 14 (9.33%) children had Functional pain abdomen, 5 (3.3%) children had FAPS, 2 (1.3%) children had Giardiasis, 2 (1.3%) children had right ovarian cyst, 3 (2%) children had coeliac disease, 3 (2%) children had cystitis and 2(1.33%) children had gastritis.

**Conclusion:** This study reports higher prevalence of FGIDs in children with RAP and also identifies the variables associated with increased risk of these disorder in children with RAP. FGIDs were present in 93% children with RAP. Female gender, school going children, psychological stress, traumatic life event and lower socioeconomic status increase the prevalence.

**Keywords:** Recurrent abdominal pain (RAP), Functional abdominal pain (FAP), chronic abdominal pain.

**Introduction**

Chronic and recurrent abdominal pain in children did not receive much attention in paediatric literature before the late 1950s<sup>1</sup>. In 1958 Apley and Naishe published results from a population-based study of schoolchildren, and introduced the term “recurrent abdominal pain” (RAP) defined as at least three episodes of pain, severe enough to affect activities, over at least three months in the preceding year<sup>2</sup>. This definition soon became common in use and has been applied in clinical paediatric practice and research since then. With enhanced knowledge and understanding, both clinicians and researchers have recognised weaknesses with this term that RAP is a description, not a diagnosis. The definition is wide and general and includes heterogeneous disorders of abdominal pain, including those with organic and non-organic etiology. The vast majority of children and adolescents with RAP have non-organic abdominal pain<sup>3</sup>. This heterogeneity of RAP has made research and treatment difficult. To make a distinction from organic disease, the term “functional gastrointestinal disorders”

(FGIDs) has been established. These are chronic or recurrent gastrointestinal symptoms not explained by structural or biochemical abnormalities<sup>4</sup>. The term “functional abdominal pain” (FAP) encompasses the pain related FGIDs<sup>4</sup>.

Chronic abdominal pain is one of the most common problem dealt in day to day practice by paediatricians. In most of these children, no cause can be identified. Although it is common but its definition, pathophysiological mechanisms and predisposing factors are not completely understood & there is need for large well performed clinical trials for evidence based treatment.

**Material and Methods**

**Study Design:** Hospital based prospective case control study.

**Study Population:** All children aged 5 to 15 years in routine OPD and indoor patient fulfilling the inclusion criteria.

**Sampling method:** Convenience sampling

**Inclusion criteria**

1. Children aged 5 to 15 years.
2. Apley and Naish criteria defined by at least three episodes of abdominal pain severe enough to affect activities over at least 3 months in the preceding year.

**Exclusion criteria**

Children aged 5 to 15 years with following warning symptoms in childhood:

**Observations**

**Table 1: Age wise Distribution of Cases of RAP**

Sex	No. of children	Percentage
Female	95	63.33
Male	55	36.67
Total	150	100.00

In the present study, Out of 150 cases, 95(63.33%) children were male and 55 (36.67%) children were female.

**Table 2: Distribution of Cases According to Socioeconomic Status**

**Modified Kuppuswamy Scale**

Socioeconomic status	No. of Cases	Percentage
Class1(upper)	2	1.33
Class 2 (upper middle)	35	23.3
Class 3 (lower middle)	104	69.33
Class 4 (upper lower)	9	6.0
Class 5 (lower)	0	0.00
Total	150	100

This table shows that 104 (69.33%) children belong to lower middle class, followed by 35 (23.3%) children in upper middle class while 9 (6%) children belong to upper lower class.

**Table 3: Distribution of Cases According to Detailed Clinical History**

Clinical History		No. of Cases	%
Site of Pain	Upper abdomen	110	73.33
	Lower abdomen	32	21.33
	Generalized	8	5.33
Association with altered bowel habits	Yes	79	52.66
	No	71	47.33
Intensity	Moderate	98	65.33
	Severe	40	26.67
	Mild	12	8.0
Interfere with daily activities	No	102	68.00
	Yes	48	32.00

Significant Weight Loss (>10% of body weight)	No	147	98.0
	Yes	3	2.0

This table shows that most common site of pain was upper abdomen present in 110 (73.33%) children, followed by lower abdomen in 32 (21.33%) children and generalized pain abdomen in 8 (5.33%) children. Out of 150 cases, 79 (52.6%) children had associated altered bowel habits and rest 71 (47.3%) children had no alteration in bowel habits. Only 3 (2%) children presented with significant weight loss.

**Table 4: Distribution of Cases According to Social Behaviour**

Presence of Stressor	No. of cases	Percentage
Yes	47	31.3
No	103	68.7
Total	150	100

In this table 47 (31.3%) children had associated negative life event, while the rest had no associated life stressor.

**Table 5: Distribution of Cases According to Final Diagnosis**

Final Diagnosis	No. of Cases	Percentage
Functional	136	90.67
Organic/infectious	14	9.33
Total	150	100

This table shows prevalence of functional GI Disorders in children with RAP. 136 (90.67%) children had FGIDs while rest 14 (9.33%) children had organic or infectious aetiology.

**Table 6: Distribution of Cases According to Disease**

Disease	No. of Cases	Percentage
IBS	82	54.67
Dyspepsia	37	24.67
Functional Abdominal Pain	14	9.33
Functional Abdominal Pain syndrome	5	3.33
Coeliac Disease	3	2.00
Cystitis	3	2.00
Right Ovarian Cyst	2	1.33
Giardiasis	2	1.33
Gastritis	2	1.33
Total	150	100

In this table, cases were classified according to ROME III criteria. According to clinical symptoms and investigations, 82(54.67%) children had symptoms suggestive of IBS, 37 (24.67%) children had Dyspepsia, 14 (9.33%) children had Functional pain abdomen, 5 (3.3%) children had FAPS, 2 (1.3%) children had Giardiasis, 2 (1.3%) children had right ovarian cyst, 3 (2%) children had coeliac disease, 3 (2%) children had cystitis and 2(1.33%) children had gastritis.

**Discussion**

We found that 2/3 children of our study population were between 5 to 10 years and 1/3 children were above 10 years of age.

There are more than 36 studies done on FAP since 1958 for evaluation of relationship in between age and prevalence of FAP but no data pooled for single age group but some studies have two peaks in prevalence, first below five year age and then between 8 to 10 year age<sup>5</sup>.

In our present study, we found Female (63.3%) predominance over males with (female/male ratio 1.7:1).

Gender prevalence was found in 24 studies. In 1958 Apley and Naish<sup>5</sup> done a epidemiological study on RAP and found that girls were affected more often than boys. In year 1990 Lundby et al<sup>6</sup> observed that in general there was no significant difference in the frequency of RAP in boys and girls but a preponderance of girls with RAP after the age of ten years were found. Girls have a higher prevalence of FAP than boys (female/male ratio 1.4:1) with a female predominance seeming to become evident around puberty.

In the present study, out of 150 cases, 2/3 of children were from families with lower family income. According to Kuppuswamy scale, 104 (69.33%) children belong to lower middle class, followed by 35 (23.3%) children in upper middle class while 9 (6%) children belong to upper lower class. In the year 2000, Boey et al<sup>7</sup> did a study to determine the prevalence of recurrent abdominal pain (RAP) among Malaysian school children. They observed that there was higher prevalence of RAP in rural school children (P = 0.008; odds ratio (OR) 1.58), in those with a lower family income (P < 0.001; OR 2.02) and in children whose fathers have a lower educational attainment (P = 0.002; OR 1.92).

Upper abdominal pain was most common presentation 110 (73.33%) children, followed by lower abdomen in 32 (21.33%) children and generalized pain abdomen in 8 (5.33%) children.

In the year 2002, Abd El-Mageid et al<sup>8</sup> observed that Non-organic RAP was described as mild (68.2%), gradual (64.3%), poorly localized (79.6%) pain, that was experienced more or less on daily basis (79%), and lasts for shorter duration (68.5%) [less than 15 minutes]. It was commonly associated with headaches (46.9%), diarrhea (36.9%), and other pains all over the body (13.4%).

In the year 2002, Abd El Mageid<sup>8</sup> did a study to investigate the possible relation between the occurrence of RAP and family and school related problems and observed that RAP was mostly non-organic in origin (65.7%). It was commonly associated with family troubles (59.7%) and school related problems (40.3%).

In the year 2005, Chitkara et al<sup>1</sup> did a study about the prevalence, incidence, natural history and co-morbid conditions of childhood RAP in western countries. They concluded that RAP is a common complaint of childhood with associated familial, psychological, and co-morbid conditions. There are numerous studies which showed an increase in prevalence of abdominal pain in children with high stress levels<sup>9-10</sup>.

### **Conclusion**

This study reports higher prevalence of FGIDs in children with RAP and also identifies the variables associated with increased risk of this disorder in children with RAP. Female gender, school going children, psychological stress, traumatic life event and lower socioeconomic status increase the prevalence.

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