

# Prevalence of *H. pylori* Infection in the Children having Recurrent Abdominal Pain

Faiza Rasool<sup>1</sup>, Jawairia Siddique<sup>2</sup>, Bostan Anwar<sup>3</sup>

<sup>1</sup>Sir Ganga Ram Hospital, Lahore, Pakistan

<sup>2</sup>Holy Family Hospital, Rawalpindi, Pakistan

<sup>3</sup>DHQ Hospital, Rawalpindi, Pakistan

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## ABSTRACT

**Background and objective:** The stomach's acidic environment is the growth site for *Helicobacter pylori*, a pathogenic Gram-negative bacterium with rod shape. The aim of this study is determination of the prevalence of *Helicobacter pylori* infection in the children having recurrent abdominal pain.

**Materials and methods:** This cross-sectional study was carried out during 2018 in Sir Ganga Ra Hospital, Lahore. The sample was consisted of 200 participants among them the proportion of *Helicobacter* was 8% in patients with Recurrent Abdominal Pain.

**Results:** The mean age of the patients was 12.43 ± 1.23 years. Mostly the age of the sample group was between 8 to 16 years. The 4.23 ± 0.47 months was the

mean time period of abdominal pain. *Helicobacter pylori* were found in 47% of patients.

**Conclusion:** In paediatric population, *Helicobacter pylori* is very common with Recurrent Abdominal Pain. It is a severe problem in children and further study is recommended to explore the risk element associated with this increase trouble of *Helicobacter pylori*.

**Key words:** Recurrent Abdominal Pain, Abdominal pain, *Helicobacter pylori*

## \*Correspondence:

Faiza Rasool, Sir Ganga Ram Hospital, Lahore, Pakistan, E-mail: na8769563@gmail.com

## INTRODUCTION

Clinical advice is being sought by many children for Recurrent Abdominal Pain (RAP). The routine activities of school going children (4% to 25%) get obstructed by the Recurrent Abdominal Pain. It appears to be a benign issue, but morbidities are connected with Recurrent Abdominal Pain which covers poor attendance in school, laparotomies and admission in hospital, sometimes symptoms continue to maturity (Aguemon B *et al.*, 2005). Absent from the school, poor physical abilities, social withdrawal is occurring in school children from 10% to 15% because of RAP on regular basis which lead to more visits to hospitals and have adverse effect on the health of a child. The disease burden is under scored as one out of three is experiencing the chronic pain for at least 5 years (Chitkara D *et al.*, 2008). This complication may lead to one of the adulthood complications i.e., irritable bowel syndrome, which is a GIT disease (Chitkara D *et al.*, 2008).

The stomach's acidic environment is the growth site for *H. pylori*, a pathogenic Gram-negative bacterium with rod shape (Demirceken F *et al.*, 2010). According to one estimate, 50% of people in world are infected with *Helicobacter pylori*. Currently the developing countries are on the hit list of *Helicobacter pylori*. Long experience of *Helicobacter pylori* is normally asymptomatic but it may take towards the chronic gastritis in paediatric patients and occasionally peptic ulcer is associated with it. In one study, epigastric pain has been considered as red flag symptom, abdominal pain and *Helicobacter pylori* are indicated to have prominent connection with paediatric patients (Dengler-Criss C *et al.*, 2011). No causal relationship in other studies has been found in between *Helicobacter pylori* infection and abdominal pain (Gieteling M *et al.*, 2011).

*Helicobacter pylori* infection is the reason for Recurrent Abdominal Pain and dyspepsia in 65% of Turkish child patients. It has been observed in a study that there was 8% (70/873). *Helicobacter pylori* children infection with Recurrent Abdominal Pain (Gieteling M *et al.*, 2011). The current study is focused to assess the prevalence of *Helicobacter pylori* in children having Recurrent Abdominal Pain. *Helicobacter pylori* is common in

the population, variation has been suggested in the literature with regard to the prevalence rate from region to region. Furthermore, it has been suggested by few studies that there exists a connection between RAP and *H. pylori* in children whereas other researches have failed to do so (Helgeland H *et al.*, 2011).

In the current research, the prevalence will be determined in the local children having recurrent Abdominal Pain. The findings of this research will provide local extent of the issue and will also be helpful for local gastroenterologists and paediatricians for the development of strategies for prospective research.

## METHODOLOGY OF THE STUDY

This cross-sectional study was conducted at Sir Ganga Ram Hospital, Lahore during 2018. The sample was consisted of 200 participants among them the proportion of *Helicobacter* was 8% in children with RAP, confidence interval was 95% with margin of error being 4%, used according to World Health Organisation formula for estimation of sample size. Both male and female children between the age of 5 to 16 years having Recurrent Abdominal Pain for minimum 3 months were registered.

## Exclusion criteria

The study excluded the children who had previously been diagnosed or had been treated for *Helicobacter pylori* and also who had history of in taking of PPI in last two weeks.

## Data collection procedure

The approval for conducting the study was given by the hospital research and ethical board. All patients who fulfil the criteria for inclusion (according to Rome II criteria for Recurrent Abdominal Pain) were registered in research through Outdoor Patient Department. The object and significance of research was elaborated to the guardians and consequently written informed consent were acquired. Examination was conducted of all children. Under strict aseptic technique 5 ml blood was taken and sent for *Helicobacter pylori* detection by using the method of ELISA in the hospital laboratory. All the examinations were performed by pathologist form hospital laboratory.

**Data analysis**

Data was analysed by using SPSS version 14.0. Calculation of Mean ± SD was made for quantitative variables such as age and period of abdominal pain. Calculation of percentages and frequencies was made for gender and *Helicobacter pylori*. *Helicobacter pylori* was stratified with sex and age in order to find out the effect modifications. Chi-square test was used to perform post stratification keeping p-value < 0.05.

**RESULTS**

200 children were registered in the research having Recurrent Abdominal Pain. The mean age of the sample group was 12.43 ± 1.23 years. In the current study the age range was 8 years with maximum of 15 years of age and minimum of 5 years of age. By dividing the sample in different age groups, it has been found that in the age group of 5 to 8 years there were 15.58% patients, in the age group of 8 to 12 years there were 63.52% patients and in the age group of 12 to 16 years there were 73.68% patients. While dividing the children with regard to sex, it has been observed that in the current study there were 50% male and 50% females (Table 1).

**Table 1: Gender based distribution**

Gender	F (Frequency)	% age
M	100	50%
F	100	50%
Total	200	100%

The 4.23 ± 0.47 months was the mean duration of abdominal pain. On ELISA, *Helicobacter Pylori* was found in 47% of patients. Under strict septic technique 5 ml blood was taken and sent for *Helicobacter pylori* detection by using the method of ELISA in the hospital laboratory (Table 2) whereas *Helicobacter pylori* was stratified with respect to age groups, Chi-square test was used for obtaining statistically insignificant difference and p-value of 0.67 (Table 3).

**Table 2: Distribution of *H. pylori* infection**

<i>H. pylori</i>	Frequency	Percentage
Present	94	47%
Absent	106	53%
Total	200	100%

On the other hand, *Helicobacter pylori* was stratified with respect to sex, it has been observed while using chi-square test and P-value of 0.44 (Table 4) the difference was statistically significant.

**Table 3: Distribution of *H. pylori* infection on the basis of age**

			<i>H. pylori</i>		Total
			Yes	No	
Age groups	Total	Frequency	12	65	77
		Percentage	15.58%	84.41%	100%
	Total	Frequency	54	31	85
		Percentage	63.52%	36.47%	100%
	Total	Frequency	28	10	38
		Percentage	73.68%	26.31%	100%
Total		Frequency	94	106	200
		Percentage	47%	53%	100%

**Table 4: Distribution of *H. pylori* infection on the basis of gender**

			<i>H. pylori</i>		Total	
			Yes	No		
Gender	Percentage	Frequency	48	52	100	
		Percentage	48%	52%	50%	
	Percentage	Frequency	46	54	100	
		Percentage	46%	54%	50%	
	Total		Frequency	94	106	200
			Percentage	47%	53%	100%

**DISCUSSION**

In normal routine at Netherlands, 5% childhood consultation was related to the abdominal pain whereas in US and Austria the prevalence of consultation was 2% to 4%. Undiagnosed medical cases are labelled with functional abdominal pain (Jang K *et al.*, 2015) (Koletzko S *et al.*, 2011) (Mansour M *et al.*, 2012). Disturbed social life, poor physical and mental activity and school failure because of frequent abdominal pain has been found in 10% to 15% school going patients which is leading to the frequent visits to healthcare. The problem is misjudged as 1 out of 3 children are suffering from abdominal pain for minimum 5 years of age (Martin A *et al.*, 2014). Childhood functional gastro-intestinal is considered to be the result of Irritable Bowel Syndrome in adults. Some elements have been pointed out to predict that whether the childhood functional abdominal pain obstruct the well-being of a child, if it remains for years (Palermo T *et al.*, 2010).

Recently the increased level of non-gastrointestinal symptoms has been connected with the adulthood's functional gastro-intestinal disorder. Children besides abdominal pain having functional abdominal pain with somatic symptom can be applied as clinical marker forecasting bad result (Poddar U *et al.*, 2007). Parents can be correlated with patient having long term continuance abdominal pain, in case of gastrointestinal symptoms as well. In view of these circumstances the family physician can point out patients with risk of longstanding abdominal pain. Across the world the most frequent pathogen in children is *Helicobacter pylori*, more than half of the world population have gram negative bacterium, mostly children infected remain asymptomatic, despite of the fact peptic ulcer and chronic gastritis are occurring because of long exposure to infection of *Helicobacter pylori* (Rasheed F *et al.*, 2011) (Soltani J *et al.*, 2013).

The prevalence of *H. pylori* differs with respect to age, race and region. Increase age is connected with high prevalence of *Helicobacter pylori* infection. *Helicobacter pylori* infection transmits from individual to individual even in family. A research carried out in 2005 over 15,916 people in healthy condition over 16 years of age. There was 29.3% prevalence of *Helicobacter Pylori* in people in their twenties, 49.1% was in their thirties, 57.8% was in their forties and 61.5% prevalence was in their fifties this reveals that prevalence is enhancing with the age (Spee L *et al.*, 2010). The data of the current study is comparable with other developing countries such as Benin, India, Egypt and other reported studies from Pakistan, have alike result. The main cause of different prevalence of *Helicobacter pylori* in the children of developing and developed countries is that poor environment, low socio-economic status and poor living condition. It has been reported in literature that the low socio-economic class is at the hit list of *Helicobacter pylori* infection (Spee L *et al.*, 2010).

Children who belong to group of low income have poor sanitary habits and living condition therefore are more vulnerable to *Helicobacter pylori* infection; but this is not happening all the time because there is other source of infection as well such as there exist people independent from social class (Telmesani A. 2009). Likewise, no connection has been shown in meta-analysis and reviews between *Helicobacter pylori* infection and RAP. In the current research it has been found that children with RAP have prevalence of *Helicobacter pylori* infection. Studies conducted in US and Saudi Arabia are comparable to current studies (Tindberg Y *et al.*, 2005).

It is routine practice for parents and general physician to manage anti-helminthic to children with RAP. The current research has suggested the additional role of *Helicobacter pylori* in RAP. These results need further research in large number of children to report the role of *Helicobacter Pylori* in RAP. The patients of the current study were enrolled from hospital (Yim J *et al.*, 2007).

## CONCLUSION

It is concluded that Recurrent Abdominal Pain is considered common in the current paediatric population causing because of *Helicobacter pylori*. Therefore, more study is recommended to find risk elements for *Helicobacter pylori* infection. This will significantly lessen the load of *Helicobacter Pylori* and other connected morbidities.

## STUDY LIMITATIONS

The main restriction which was difficult to make the current result general the patients from the general paediatric population were removed. It is very hard task to extract the patient from general paediatric population for the purpose of study because they do not consent for blood sampling. For that very reason community base research on *Helicobacter pylori* is the current population has restriction. In developing countries study test like faecal antigen test or urea breath test are recommended because they are adequate.

## REFERENCES

1. Aguemon B, Struelens M, Massougbdji A, Ouendo E. Prevalence and risk-factors for *Helicobacter pylori* infection in urban and rural Beninese populations. *Clin Microbiol Infect.* 2005; 11: 611-617.
2. Chitkara D, Rawat D, Talley N. The epidemiology of childhood recurrent abdominal pain in western countries: a systematic review. *Am J Gastroenterol.* 2005; 100(8): 1868-1875.
3. Chitkara D, Tilburg M, Blois-Martin N, Whitehead W. Early life risk factors that contribute to irritable bowel syndrome in adults: a systematic review. *Am J Gastroenterol.* 2008; 103(3): 765-774.
4. Demirceken F, Kurt G, Dulkadir R, Alpcan A, Bulbul S. Functional dyspepsia in children: A Turkish prospective survey in kirikkale province. *J Pediatr Gastroenterol Nutr.* 2010; 122-123.
5. Dengler-Crish C, Horst S, Walker L. Somatic complaints in childhood functional abdominal pain are associated with functional gastrointestinal disorders in adolescence and adulthood. *J Pediatr Gastroenterol Nutr.* 2011; 52(2): 162-165.
6. Gieteling M, Bierma-Zeinstra S, Lisman-van LY, Passchier J, Berger M. Prognostic factors for persistence of chronic abdominal pain in children. *J Pediatr Gastroenterol Nutr.* 2011; 52(2): 154-161.
7. Gieteling M, Lisman-van LY, van der Wouden J, Schellevis F, Berger M. Childhood nonspecific abdominal pain in family practice: incidence, associated factors, and management. *Ann Fam Med.* 2011; 9(4): 337-343.
8. Helgeland H, Van RB, Sandvik L, Markestad T, Kristensen H. Paediatric functional abdominal pain: significance of child and maternal health: A prospective study. *Acta Paediatr.* 2011; 100(11): 1461-1467.
9. Jang K, Choe B, Choe J, Hong S, Park H, Chu M. Changing Prevalence of *Helicobacter pylori* Infections in Korean Children with Recurrent Abdominal Pain. *Ped Gastroenterol Hepatol Nutri.* 2015; 18(1): 10-16.
10. Koletzko S, Jones N, Goodman K. H pylori Working Groups of Espghan and Naspghan. Evidence-based guidelines from Espghan and Naspghan for *Helicobacter pylori* infection in children. *J Pediatr Gastroenterol Nutr.* 2011; 53(2): 230-243.
11. Mansour M, Al HadidiKh M, Omar M. *Helicobacter pylori* and recurrent abdominal pain in children: is there any relation?. *Trop Gastroenterol.* 2012; 33: 55-61.
12. Martin A, Newlove-Delgado T, Abbott R, Bethel A, Thompson-Coon J, Nikolaou V. Psychosocial interventions for recurrent abdominal pain in childhood (Protocol). *Cochrane Database of Systematic Reviews.* 2014; 2: CD010971.
13. Palermo T, Eccleston C, Lewandowski A, Williams A, Morley S. Randomized controlled trials of psychological therapies for management of chronic pain in children and adolescents: an updated meta-analytic review. *Pain.* 2010; 148: 387-397.
14. Poddar U, Yachha S. *Helicobacter pylori* in children: an Indian perspective. *Ind Pediatr.* 2007; 44: 761-770.
15. Rasheed F, Ahmad T, Bilal R. Frequency of *Helicobacter pylori* infection using 13C-UBT in asymptomatic individuals of Barakaho, Islamabad, Pakistan. *J Coll Physicians Surg Pak.* 2011; 21: 379-381.
16. Soltani J, Amirzadeh J, Nahedi S, Shahsavari, S. Prevalence of *Helicobacter pylori* infection in children, a population-based cross-sectional study in west of Iran. *Iran J Pediatr* 2013; 23: 13-18.
17. Spee L, Madderom M, Pijpers M, van Leeuwen Y, Berger M. Association between *Helicobacter pylori* and gastrointestinal symptoms in children. *Pediatr.* 2010; 125(3): e651-e669.
18. Spee L, van den Hurk A, van Leeuwen Y. Childhood abdominal pain in primary care: design and patient selection of the Honeur abdominal pain cohort. *BMC Fam Pract.* 2010; 11: 27.
19. Telmesani A. *Helicobacter pylori*: prevalence and relationship with abdominal pain in school children in Makkah City, western Saudi Arabia. *Saudi J Gastroenterol.* 2009; 15: 100-103.

20. Tindberg Y, Nyren O, Blennow M, Granström M. *Helicobacter pylori* infection and abdominal symptoms among Swedish school children. *J Pediatr Gastroenterol Nutr.* 2005; 41: 33-38.
21. Yim J, Kim N, Choi S, Kim Y, Cho K, Kim S. Seroprevalence of *Helicobacter pylori* in South Korea. *Helicobacter.* 2007; 12: 333-340.