

Quality of Life in Children With Recurrent Abdominal Pain Caused by *Helicobacter Pylori* Infection in Bandung, Indonesia

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ABSTRACT

AIM: Recurrent abdominal pain (RAP) is a common problem among children. Currently *Helicobacter pylori* (*H. pylori*) infection is one of the largest organic causes in children with RAP. Several studies reported the associations between quality of life (QOL) and RAP remained controversial. Our study aimed to determine QOL in children with RAP caused by *H. pylori* infection.

METHODS: A cross-sectional study was conducted on junior and senior high school students age ranged from 12 to 18 in Bandung at 2017, who were presenting RAP with *H. pylori* infection. Analysis

of QOL between positive and negative *H. pylori* infection using chi square test and *p* value ≤ 0.05 was considered statistically significant.

RESULTS: The number of children who experience RAP there were 439 out of 2,538 school children (17.3%). Those who met the inclusion criteria in this study were 149 children with 46 were positive for *H. pylori* infection (30.9%). There was no significant association QOL with *H. pylori* infection in children with RAP (*p* = 0.043).

CONCLUSIONS: Our study found there was a tendency bad QOL in children infected with *H. Pylori* more than good QOL, nevertheless no significant differences among both *H. pylori*-infected and non-infected children.

Key words: Children; *Helicobacter pylori*; Recurrent abdominal pain; Quality of life

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INTRODUCTION

Recurrent abdominal pain is a common problem one of the most prevalent conditions in children and adolescents population worldwide^[1]. Recurrent abdominal pain in children is defined as at least three episodes of pain that occur over at least three months and affect the child's ability to perform normal activities^[2]. Chronic or recurrent episodes of abdominal pain can be explained as symptom of an underlying organic disease or can be defined as functional abdominal pain^[3]. When infectious, inflammatory, structural, or biochemical processes are absent. Abdominal pain is often an alarming symptom which leads to frequent healthcare consultation. Few studies conducted in children with abdominal pain, have reported healthcare consultation of 39% to 93% in affected children^[4].

Recurrent abdominal pain may responsible for 2% to 4% of pediatric outpatient clinic^[5]. Many researchers had shown an association between *H. pylori* infection and RAP^[6]. The frequency of *H. pylori* infection in RAP children from various studies in China, Saudi Arabia, Pakistan, Indonesia and Egypt ranged from 18.6% to 67.5%^[7-12].

Helicobacter pylori infection is a major cause of various gastro-duodenal disorders such as peptic ulcer, duodenal ulcer, adenocarcinoma of gastric and mucosa associated lymphoid tissue lymphoma (MALT lymphoma) in adulthood and autoimmune gastritis^[13].

Quality of life is a term used to refer to an individual's total well-being. This includes all emotional, social and physical aspects of an individual's life^[4]. It appears to account for 2% to 4% all of pediatric office visits. One study suggested that 13% of middle school students and 17% of high school students experience weekly abdominal pain. In the latter study, it was also noted that approximately 8% of all students had seen a physician for evaluation of abdominal pain in the previous year. Quality of life in adult patients with chronic abdominal pain is substantially poorer than that of the general population^[3]. As in other chronic diseases, *H. pylori* infection in adult might sub clinically impair various mental and physical aspects of a patient's QOL^[14]. This research aimed to determine quality of life in children with RAP positive *H. pylori* infection.

METHODS

A cross sectional study in children with RAP was held in junior high school and senior high school in Bandung Indonesia at 2017. The subjects of this study met the inclusion criteria's: the age ranged from 12 to 18 years old, had symptoms of RAP, and the parents agreed their children to participate in this study. Exclusion criteria were children who didn't come during blood sample taking.

The children who fulfilled the inclusion criteria filled the informed consent to have blood sample taking and informed their parents and to be examined the serum anti *H. pylori* IgG using BioM *pylori* kit (local antigen of Mataram, Indonesia) that had a sensitivity of 95% and specificity of 92%^[15]. The result from the examination was divided into two groups, positive and negative *H. pylori* group. The characteristic and QOL of both groups were recorded. Recurrent abdominal pain was defined as at least three separate episodes of abdominal pain that occurred in a 3-month period, severe enough to affect daily activities. The *H. pylori* infection was positive if serum IgG was positive. Quality of life were assessed by Pediatric Quality of Life (PedsQL) and defined good (PedsQL score > 70) and bad (PedsQL score ≤ 70).

Ethics statements

Ethical approval of this study was obtained from the Ethical Committee of Faculty of Medicine Padjadjaran University. N0: 818UNSC.10 PN2017.

Statistical analysis

The significant test in QOL of the two study groups used chi-square test. The criteria of significance used was *p* value ≤ 0.05 was considered significant statistically. The data obtained was recorded in a special form and then processed with SPSS version 21.0 for Windows.

RESULTS

There were 439 (17.3%) of 2,538 students accompanied by complaints of RAP, who fulfilled the inclusion criteria for 149 children, because some children did not get approval from parents, refused to take blood samples and were not present at the time of blood collection. There were 46 (30.9%) subjects with positive *H. pylori*.

We found characteristics of subjects with RAP, girls more frequent than boys with RAP, while for age, mother and father education are relatively the same for all groups, and family income is obtained most in high income groups (Table 1).

Our study showed that the relationship between characteristics RAP in children with *H. pylori* infection and RAP, there are no significant difference in sex, age, mother's and Father's education, economic status, bed sharing, and number of occupant (Table 2).

Table 1 Characteristics of children with RAP.

Variable	Total	%
Children		
Sex		
Boys	21	14.1
Girls	128	85.9
Age (years)		
12-14	71	47.4
15-18	78	52.3
Parents		
Mother's education		
Low	50	33.6
Middle	59	39.6
High	40	26.8
Father's education		
Low	41	27.5
Middle	56	37.6
High	52	34.9
Economic status		
Low	45	30.2
Middle	43	28.9
High	61	40.9

Table 2 Relationship between RAP in Children and *H. pylori* infection.

Characteristics	H. pylori		p value*
	Positive (%)	Negative (%)	
Sex			
Boys	8 (38.1)	13 (61.9)	0.44
Girls	38 (29.7)	90 (70.3)	
Age (years)			
12-14	17 (23.9)	54 (76.1)	0.081
15-18	29 (37.2)	49 (62.8)	
Mother's education			
Low	12 (24.0)	38 (76.0)	0.432
Middle	20 (33.9)	39 (66.1)	
High	14 (35)	26 (65.0)	
Father's education			
Low	12 (29.3)	29 (70.7)	0.767
Middle	16 (28.6)	40 (71.4)	
High	18 (34.6)	34 (65.4)	
Economic status			
Low	15 (33.3)	30 (66.7)	0.858
Middle	12 (27.9)	31 (72.1)	
High	19 (31.1)	42 (68.9)	
Bed sharing			
Alone	29 (31.9)	62 (68.1)	0.742
Two or more	17 (29.3)	41 (70.7)	
Number of occupants			
Median	4,5	5	0.082**)
Rate	3 - 7	2 - 14	

*) Chi-square or Fisher exact test, **) Mann-Whitney test.

Table 3 Relationship between H. pylori infection and quality of life.

Variable	H. pylori infection (n=149)		p value*)	
	Positive (%) [n=46 (30.9)]	Negative (%) [n=103 (69.1)]		
Quality of life	Bad	31 (33.7)	61 (66.3)	0.343
	Good	15 (26.3)	42 (73.7)	

*) Chi-square.

In this study it was found that there is a tendency bad QOL in children infected with *H. Pylori* more than good QOL, nevertheless no significant differences among both *H. pylori*-infected and non-infected children ($p = 0.343$) (Table 3).

DISCUSSION

Recurrent abdominal pain is most often considered functional (non-organic) abdominal pain, but an organic cause is found in 5% to 10% of cases. If RAP is not associated with an anatomic, metabolic, infectious, inflammatory, or neoplastic disorder, it is considered functional (nonorganic) abdominal pain^[2]. In Apley's original study, the prevalence of recurrent abdominal pain in a population of school children was 10%. In subsequent studies from using his criteria the prevalence ranged from 11% to 45%^[16]. In total, 149 children with RAP, 21 boys (14.1%) and 128 (85.9%) girls, aged 12-14 and 15-18 year(s) were enrolled. The prevalence of RAP in this study was 17.3%. This result is the same as previous research globally.

In our study, the prevalence of *H. pylori* infection in children with RAP was 30.9%. Previous studies by Etukudo OM *et al*, Duque X *et al*, Dattoli VCC *et al* and Jafri W have been reported *H. pylori* in children in other developing countries (17-63%)^[17-20] and East Asian countries (9-11%) from Tam YH *et al* and Lin DB *et al*^[21-22]. Our finding is lower than previous similar studies in Indonesia, Jakarta (54.8%) and Bandung (56.4%) by Soelaeman EJ *et al* and Prasetyo D *et al*^[10,11].

The gender of boys found to be more infected with *H. pylori*, gender of the children showed no significant difference with *H. pylori* infection. *Helicobacter pylori* infection in the 15-18 age group was higher than the 12-14 year age group, but there was no statistically significant difference. These finding in gender and age are in line with study conducted from Mahmud S *et al*^[9]. In other studies from Dattoli VCC *et al* and Jafri W *et al*, different results showed that children infected with *H. pylori* were significantly associated with increasing age. The reasoning about age was associated with *H. pylori* infection is still unknown, that was show in the studies conducted by Dattoli VCC *et al* and Jafri W *et al*^[19,20].

We demonstrated the educational status of parents no significant difference in children with *H. pylori* infection, similar reported by Awuku YA *et al*^[23]. Socioeconomic status of a family has been no implicated as a risk factor for higher incidence of HP infections, different from those in previous studies from Mahmud S *et al*^[9].

Bed sharing and number of occupants no significant differences among both *H. pylori* infected and non-infected children. In the present study shows that different with previous research sharing a bed or bedroom with an infected sibling in early childhood increases significantly the risk of childhood *H. pylori* infection. Crowding in households and increasing household contact have been linked as risk factors of *H. pylori* infection. This provides evidence from Awuku YA *et al* and Farrell S *et al* to support horizontal transmission of *H. pylori* among siblings^[23,24].

Recurrent abdominal pain is associated with school absences. The abdominal pain is commonly associated with other symptoms, including headaches, recurrent limb pains, pallor, and vomiting and can continue into adulthood. Recurrent abdominal pain can cause significant anxiety in parents and carers found in a study from Abbott RA^[25].

Research on quality of life in children with recurrent abdominal pain caused by *H. Pylori* is still rare. Some studies by Buzás GM and Moayyedi P *et al* have suggested that *H. pylori* impacts quality of life in patients with dyspepsia and peptic ulcer disease^[26,27]. Our findings

indicate that there is a tendency for bad quality of life in children infected with *H. pylori* to be more than good quality of life, but there is no significant relationship in quality of life between RAP children with positive and negative *H. pylori* infections. Based on research in adults from Taguchi H *et al* *H. pylori* infections might impair patient's quality of life and the eradication of *H. pylori* improved the QOL^[14] and successful *H. pylori* eradication improved the QOL of patients with functional dyspepsia, in particular *H. pylori*-positive patients with ulcer-like functional dyspepsia or dysmotility-like functional dyspepsia shows by study from Suzuki H *et al*^[28].

In conclusion, our study found there was a tendency bad QOL in children infected with *H. Pylori* more than good QOL, nevertheless no significant differences among both *H. pylori*-infected and non-infected children

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