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Research Article

IMPACTS OF H. PYLORI ON THE ORAL HYGIENE OF CHILDREN AND ITS IDENTIFICATION AND TREATMENT

¹Dr Amna Ahmed, ²Dr Shaista Akbar, ³Dr Ambreen Zahra

¹Punjab Dental Hospital, Lahore

²Fatima Memorial College of Medicine and Dentistry

³DE 'Montmorency College of Dentistry, Lahore

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Abstract:

Objective: The aim of this study is to segregate *H. Pylori* from the dental plaque (DP) of a patient and a healthy group and carried out the comparison between the results of both groups.

Methods: This research work was conducted on seventy children approaching from the age of five to fifteen years. We carried out the intra-oral examination of every patient. For observation, we made the collection of DP and saliva samples. We noted the condition of oral health, eating habits, frequency of tooth-brushing, pH levels of saliva, velocity of flow and ability to immune. We used KW test (Kruskal–Wallis test) for comparing DMFT and DFT indices.

Results: The occurrence of *H. Pylori* in DP was more in patient group in comparison to healthy control group. There were no variations in these two groups according to parameters such as eating habits, DMFT and dft score, frequency of brushing, pH level of saliva and velocity of flow. But the patient group had low buffering capacity of saliva.

Conclusion: The occurrence of helicobacter pylori was higher in DP (dental plaque). So, *H. Pylori* can make colonies in oral cavity. Good oral health can contribute to prevent painful inflammation in stomach (gastritis).

KEYWORDS: *H. Pylori*, Micro-Aerophilic, Occurrence, Dental Plaque, Buffering Capacity, DMFT and Dft Scores.

Corresponding author:

Dr. Amna Ahmed,

Punjab Dental Hospital, Lahore

QR code



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INTRODUCTION:

We can identify many infections in children by observing symptoms in oral cavity [1]. Oral symptoms can help to identify many systematic diseases. It is the first part of our excretory and digestive system [2]. So, gastrointestinal diseases have first impact on oral health therefore its indications appear in the oral cavity. H. Pylori is the frequent cause of Gastritis [3] which is the inflammation of mucous membrane of the stomach. H. Pylori is a gram negative, rod shaped and micro-aerophilic type of bacteria. It is the main causative agent of Gastritis, stomach ulcers and cancers [4]. There is higher occurrence of H. Pylori infections in under-developed countries [5]. Its occurrence is highest in Turkey. Özden reported that H. Pylori infection diagnosed in 79.0% patients having the age of 7 to 12 years, 83.0% patients having the age of 13 to 18 years and 96.0% patients having the age of 25 to 29 years [6]. H. Pylori makes its colonies in DP (dental plaque) and in mucous membrane of stomach [7-9]. There are a lot of studies showing the occurrence of H. Pylori infection in adults but rare studies focus on children. There is controversy about prevalence of this infection in non-digestive parts. The purpose of this research is to identify the occurrence of Helicobacter Pylori in DP, and to analyze the relation between H. Pylori and different parameters of saliva.

METHODOLOGY:

This research was carried out in Punjab Dental Hospital, Lahore. The ethical committee of the hospital approved this research. There were thirty-five children in the patient group. The healthy control group also consisted of thirty-five patients. We excluded those patients from study, who were taking antibiotics from last four weeks before diagnosis of infection. The patients were having the age of five to fifteen years. We collected the samples of DP from different parts by utilizing SGP (sterile gracey probes).

We collected the samples after the patients had their meal but before cleaning their oral cavity. We placed the samples in CLO Test Procedure and analyzed the results after 60 minutes. By the utilization of standards of World Health Organization, we examined the oral cavity by using a mirror and a probe in artificial light [10]. We analyzed and categorized the oral health as good, bad or satisfactory by utilizing the green and vermilion's oral health index [11]. We examined the saliva by utilizing SCB (saliva check buffer). We recommended patients to chew Paraffin Vax for 5 minutes, then we collected it in sterile cups. After that, we recorded different salivary parameters as flow velocity and buffering capacity by using SCB. We dropped a small amount of saliva on test pads using small glass tubes. We recorded the buffering capacity with respect to change of color of test pads. We measured the pH of saliva by utilizing a test strip. We placed the strip in saliva for ten seconds. We compared the changed color of strip with chart of pH testing. We calculated index of DP by the utilization of S&LC (Silness and Loe's classification). We asked about the brushing and eating habits of patients. We statistically analyzed the data by utilizing version 18 of SPSS (statistical package of social sciences). To compare salivary indices, we used KW test. We used chi square test to examine H. Pylori in DP.

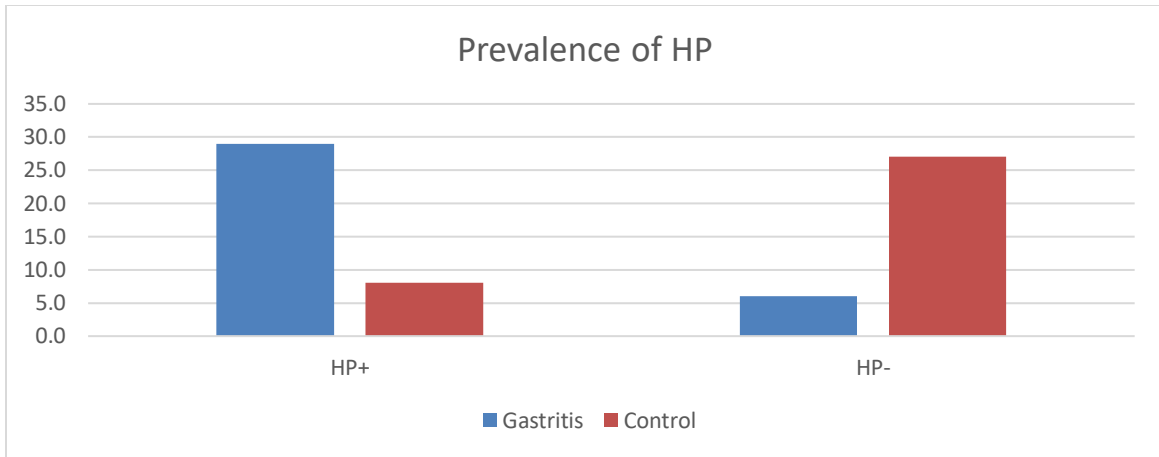
RESULTS:

There were thirty-five children in the patient group. There were thirty-five patients also in healthy group. In the patient group, 82.90% (29) showed DP positive while in 17.10% (6) DP was negative. In the healthy control group, 22.90% (8) patients were having positive DP while 77.10% (27) were having negative DP. In comparison with control group, the occurrence of H. Pylori was higher in patient group (Table-1). We calculated the dental caries indices of patient and healthy control group. Its rate was higher in patient group.

Table-I: The Presence of Oral HP in the Groups

Oral HP	Gastritis	Control
HP+	29.0	8.0
HP-	6.0	27.0

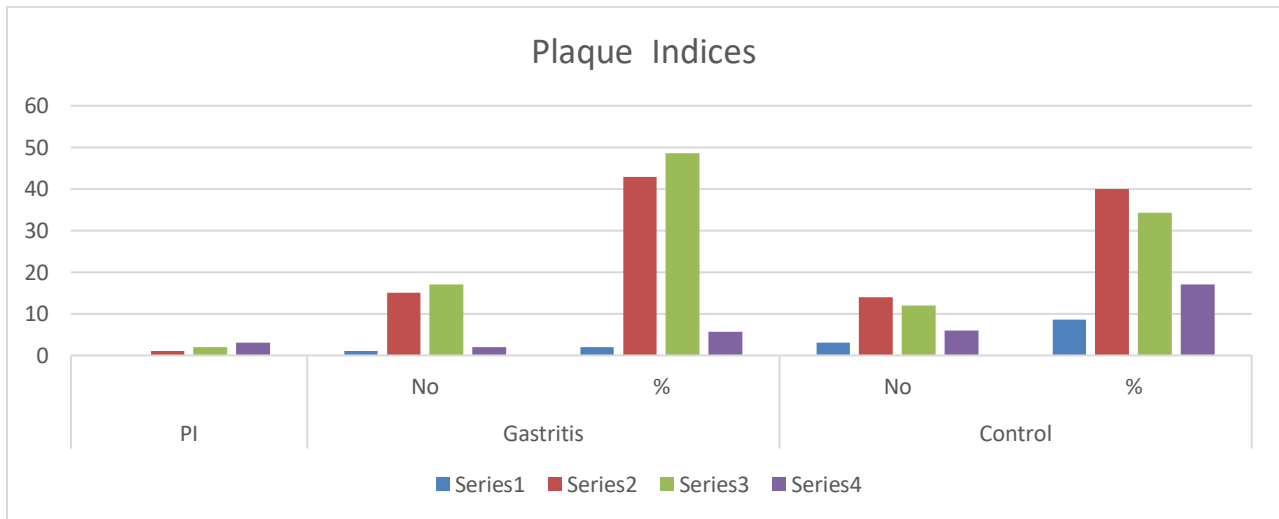
Significant difference between two groups, $p < 0.05$.



In the patient group, we observed the minor DP presence in 42.90% (15) patients, average in 48.60% patients, severe in 5.70% (2) and one patient was having no DP. In the healthy control group, we noticed the minor DP presence in 40.0% (14) patients, average in 34.30% (12) patients, severe in 17.10% (6) patients and 3 patients were having no DP (Table-2).

Table 2: Plaque Indices of Patients' Groups

PI	Gastritis		Control		p-value
	No	%	No	%	
0	1.0	2.00	3.0	8.60	0.0720
1	15.0	42.90	14.0	40.00	
2	17.0	48.60	12.0	34.30	
3	2.0	5.70	6.0	17.10	

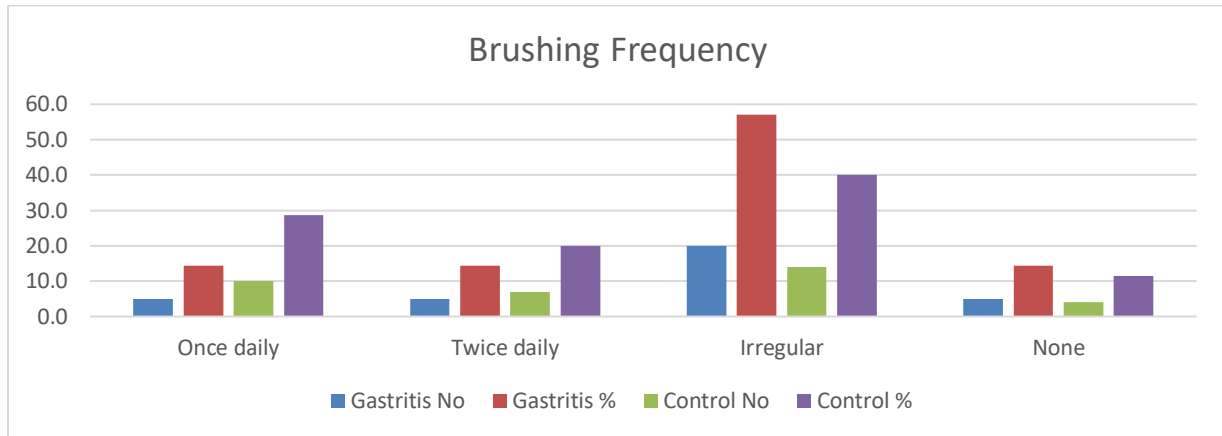


We also analyzed the tooth brushing frequency of both groups and elaborated it in Table-3.

Table 3: Frequency of Brushing of Patients' Groups

Freq of Brushing	Gastritis		Control		p-value
	No	%	No	%	
Once daily	5.0	14.30	10.0	28.60	0.0720
Twice daily	5.0	14.30	7.0	20.00	
Irregular	20.0	57.10	14.0	40.00	

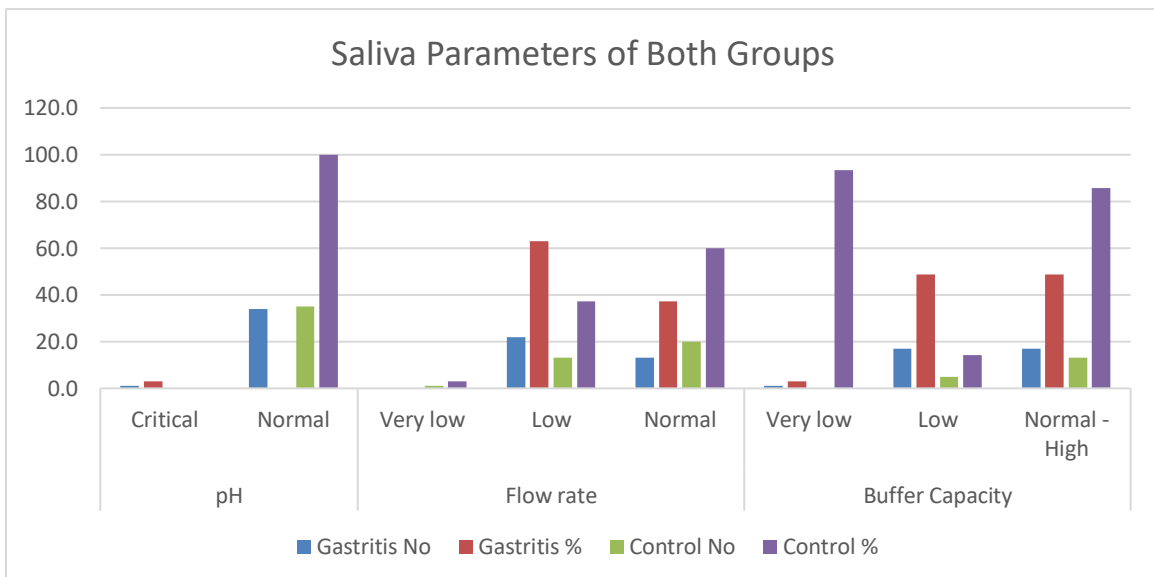
None	5.0	14.30	4.0	11.40
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We examined the eating habits of both groups. Both groups were using approximately equal amount of carbohydrates. We also detected the pH levels, saliva flow rate and saliva buffer capacity of both groups and mentioned it in Table-4.

Table 4: Saliva Parameters of Two Groups

Characteristics		Gastritis		Control		p-value
		No	%	No	%	
pH	Critical	1.0	2.90	0.0	0.00	0.3640
	Normal	34.0	97.1	35.0	100.00	
Flow rate	Very low	0.0	0.00	1.0	2.90	0.7400
	Low	22.0	62.90	13.0	37.10	
	Normal	13.0	37.10	20.0	60.00	
Buffer Capacity	Very low	1.0	2.90	0.0	93.30	0.0400
	Low	17.0	48.60	5.0	14.30	
	Normal - High	17.0	48.60	13.0	85.70	



DISCUSSION:

The major cause of digestive infections is *H. Pylori* around the world [5]. There are reports showing that the relapse of this disease can also occur [7-9]. *H. Pylori* infection can retain in oral cavity and DP [13]. In 60 to 90 percent patients, there is occurrence of *H. Pylori* in DP [14]. The findings of our research show the same results. *H. Pylori* makes its colonies in DP and relapse of the infection may occur [7, 14-19]. Previous researches elaborate that DP is not the reservoir of *H. Pylori* [20-22]. Populations of patients, their condition, infection of *H. Pylori* and oral health of patients can be the cause of this variety of arguments [23]. Song [24] detected that there was high occurrence of *H. Pylori* on molar teeth. Due to being micro-aerophilic, we can elaborate this finding according to HP's specificity to minimize the oxygen approach near the molars. So, the reproduction of *H. Pylori* increases [25].

There are many researches, showing the relation between indices of DP and occurrence of *H. Pylori* infection [3, 26-32]. Most of these researches have the same result for average indices for DP of patient group and healthy group [8, 13, 26, 27]. While according to some other researches, PIS (plaque index scores) of patient group is higher than that of healthy control group [29, 31]. Social and economic condition, oral health and eating habits can be the reason of this contrast of results [8]. There is already a description of relationship between DP indices and *H. Pylori* [33, 34]. Liu [29] demonstrated that *Helicobacter pylori* is the primary cause of dental decay. This infection is also linked with poor oral health [35]. Bali [36] noted that there was no variation between tooth brushing habits of both groups but negligence towards oral health can be the cause of this infection in patient group. According to the research of Namiot [34], the process of recovery can become slow, if there is low velocity of saliva flow. According to our research, there were no variations in these two groups according to parameters such as eating habits, DMFT and dft score, frequency of brushing, pH level of saliva and velocity of flow. But the patient group had low buffering capacity of saliva. However, there was variation of results of the buffer capacity between the patient group and healthy control group. Its rate was higher in healthy control group. Low buffer capacity can be the cause of dental decay and stomachache in patient group. However, there is requisition of more research in this field.

CONCLUSION:

H. Pylori makes its colonies in DP. Relapse of infection can occur if there is no care of oral health. Good oral hygiene can contribute to prevent painful

inflammation of mucous membrane of stomach (gastritis). Oral health education is also necessary. There is requisition of more researches to make clear the function of *H. Pylori* and its relationship with oral health and parameters of saliva.

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