



Facts for Life and Helicobacter Pylori Infection

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Abstract

Introduction: Helicobacter pylori (HP) disease is associated with poor hygiene. Similarly, poor health literacy (HL) is also associated with poor hygienic conditions. The present study aims to investigate the relationship between HL and HP disease, two conditions associated with poor hygiene.

Methods: The data from 326 patients who applied to the general surgery clinic with dyspepsia and underwent gastroscopy were evaluated in cross-sectional analytical design. Esophagus, stomach and duodenum were evaluated, and biopsy of the antrum mucosa was performed in these patients. According to report results, patients were divided into two groups as HP (+) and HP (-). Public Health Literacy Scale consisting of the questions of 'Facts of Life' was applied to the patients to evaluate their HL.

Results: The findings showed that there was no relationship between the presence of HP infection and HL. In individuals with higher HL, consumption of clean water, increased use of pasteurized milk and toilet hygiene were observed. A positive correlation was found between the increase in HL scores and the search for HP eradication therapy.

Discussion and Conclusion: Better HL is associated with hygienic behavior and help-seeking behavior for the treatment of HP. Efforts to increase HL in people with HP infection will positively affect the treatment of these patients.

Keywords: Facts for life; gastroscopy; health literacy; helicobacter pylori; hygiene.

Helicobacter pylori (HP) is a microaerophilic, gram-negative microorganism. HP gastritis is an infectious disease that is transmitted through the oral-oral, fecal-oral and gastro-oral route^[1]. There is a high prevalence of HP infection in countries with low socioeconomic status and poor sanitary conditions, and the prevalence of HP infection is remarkably lower in the Northern and Western European countries than in the Southern and Eastern European countries^[2].

HP positivity in gastric biopsy samples has been linked previously to various factors in the literature^[3], with the most

extensively studied factors being the consumption of clean water, the consumption of pasteurized milk, chronic antibiotic use and transmission during previous endoscopic examinations. Similarly, the presence of hypertension, high carbohydrate consumption and obesity are among the patient-specific factors that have been implicated^[4-6].

Health Literacy (HL) was defined as the cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand and use information in ways that promote and maintain good health^[7]. The clinical approach to health literacy developed in the

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United States aims to improve the understanding of the disease and treatment regimens of the patients by doctors, and the understanding of the doctor's prescription by the patients^[8]. Patients with a higher HL have easier access to healthcare services, and similarly, have a higher rate of access to protective healthcare services. In addition, individuals with high HL have been more successful in improving their health status. Health literacy is considered to be equivalent to good health status^[8].

'Facts for Life' is a joint publication of UNICEF, WHO, UNESCO, UNFPA, UNDP, WFP, UNAIDS and the World Bank. 'Facts for Life' aims to provide families and communities with the information they need to save and improve children's lives. Pleasant et al.^[9] developed the "Public Health Literacy" scale, which contains 17 items compiled from knowledge garnered from the "Facts for Life". This scale measures the general health knowledge of the individual. While the original "Facts for life" targets children's health and diseases, Pleasant et al. developed a scale for the general evaluation of health literacy in their study, containing questions assessing knowledge of communicable diseases, children's health, contraception and general health.

Previous studies have found HP to be related to poor hygiene in general terms^[10–12]. The present study evaluates the relationship between HL and HP infection.

Materials and Methods

Study Design

The data of 326 patients who presented to the general surgery outpatient clinics of the Bursa Higher Specialization Training and Research Hospital of the University of Health Sciences with dyspeptic complaints between May 2018 and August 2018, and who underwent a gastroscopy, were evaluated in a cross-sectional study design. Detailed information about the study was provided to the patients before the study, and written informed consent for participation was obtained. This study was conducted in accordance with the principles of the Helsinki Declaration, and the local ethics committee of the hospital approved this study.

Participants

Included in this study were literate patients aged 18 years and older. Patients who did not give their consent to participate in the survey, patients who were illiterate and healthcare personnel were excluded from this study. The demographic data of the patients were recorded. The patients were divided into two groups as HP-positive (HP+, n=154) and HP-negative (HP-, n=172).

Interventions

After arranging an appointment with the endoscopy unit for patients presenting to the general surgery outpatient clinics with dyspeptic complaints, a gastroscopy was performed by the same surgical team under oral local anesthesia following eight hours of fasting. The esophagus, stomach and duodenum were examined, and biopsies were obtained from the antral mucosa. The specimens were fixed in a formalin solution and sent to the pathology laboratory. The patients were divided into groups according to the results of the analysis as HP-positive (HP+) and HP-negative (HP-).

The public health literacy questionnaire was administered to the volunteers containing items based on the questions in "Facts for Life" and on expert opinion. The scale is a 17-item instrument in which questions are responded to as either correct or incorrect^[9]. No validation of the Turkish version of the scale was sought because the items in the scale are widely known internationally, as reported by WHO.

Statistical Analysis

A Shapiro Wilk test was used to test for the normal distribution of the variables. Continuous variables were expressed as median (minimum: maximum); categorical variables were expressed as number and percentage. A Mann-Whitney U-test was used to compare the two groups based on the results of the normality test, and a Kruskal Wallis was used to compare three groups. A Pearson's Chi-square test, Fisher's exact test and Fisher-Freeman-Halton test were used for the intergroup comparison of the categorical variables. The SPSS (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) Software package was used in the statistical analysis and a p-value of <0.05 was considered statistically significant.

Results

Included in this study were 326 patients, 206 of them were female, and 120 were male. The distribution of the sociodemographic variables of the participants is presented in Table 1. The median age was 45 years in the HP+ group and 49 years in the HP- group, and there was a significant difference between the two groups (p=0.047). No difference was found between the groups concerning gender, height, weight, BMI, education level, occupation and marital status (Table 1).

The factors that might affect HP positivity are examined in Table 2. The two groups were compared concerning smoking status, alcohol consumption, type of water consumed (tap vs. bottled), milk consumption (loose milk vs. pasteur-

Table 1. Comparison of the sociodemographic characteristics between the HP groups

	HP (+)	HP (-)	p
Age	45 (19: 86)	49 (18: 84)	0.047 ^a
Gender, (%)			
Male	52 (33.80)	68 (39.50)	0.281 ^b
Female	102 (66.20)	104 (60.50)	
Height (cm)	165 (140:194)	165 (140:193)	0.591 ^a
Weight (kg)	75 (43:152)	75 (45:195)	0.589 ^a
BMI	27.70 (17.90:47)	27.50 (17.60:67.50)	0.740 ^a
Education, (%)			
Illiterate	16 (10.40)	21 (12.20)	0.594 ^b
Literate	11 (7.10)	6 (3.50)	
Primary school	52 (33.80)	64 (37.20)	
Secondary School	28 (18.20)	24 (14)	
High school	29 (18.80)	37 (21.50)	
Associate degree	8 (5.20)	8 (4.70)	
Undergraduate	9 (5.80)	8 (4.70)	
Postgraduate	1 (0.60)	4 (2.30)	
Occupation, (%)			
Present	62 (40.30)	66 (38.40)	0.728 ^b
Absent	92 (59.70)	106 (61.60)	
Level of Income, (%)			
Very low	2 (1.30)	3 (1.70)	0.785 ^c
Low	8 (5.20)	10 (5.80)	
Moderate	115 (74.70)	130 (75.60)	
High	29 (18.80)	27 (15.70)	
Very high	0	2 (1.20)	
Marital status, (%)			
Single	23 (14.90)	26 (15.10)	0.416 ^b
Married	126 (81.80)	135 (78.50)	
Divorced	5 (3.20)	11 (6.40)	

The data are presented as median (minimum: maximum) and number (%); ^a: Mann-Whitney U-test; ^b: Pearson's Chi-Square test; ^c: Fisher-Freeman-Halton Test.

ized milk), use of bathroom tissue, history of gastroscopy, HP eradication status and antibiotic use in the last one year. No statistically significant difference was found between the groups in these parameters.

In the analysis of responses to the questions from "Facts for Life" (Table 3), the health literacy (HL) score was 12 points in patients consuming tap water and 13 points in patients consuming bottled water, and the difference between the groups was statistically significant (p=0.002). The HL score was 13 points in patients using bathroom tissue and 12 points in patients who did not use, and the difference was found to be statistically significant (p=0.018). The score of the patients who underwent HP eradication therapy was 14 points, whereas the score of the patients who did not

Table 2. Comparison of the factors that could affect helicobacter pylori positivity

	HP (+)	HP (-)	p
Smoking, (%)			
Present	40 (26)	45 (26.20)	0.969 ^b
Absent	114 (74)	127 (73.80)	
Alcohol, (%)			
Present	2 (1.30)	2 (1.20)	1.000 ^d
Absent	152 (98.70)	170 (98.80)	
Water Consumption, (%)			
Tap	92 (59.70)	92 (53.50)	0.256 ^b
Bottled	62 (40.30)	80 (46.50)	
Milk Consumption, (%)			
Loose	87 (56.50)	103 (59.90)	0.535 ^d
Pasteurized	67 (43.50)	69 (40.10)	
Use of bathroom tissue, (%)			
Yes	142 (92.20)	148 (86)	0.076 ^b
No	12 (7.80)	24 (14)	
History of Gastroscopy, (%)			
No	101 (65.60)	98 (57)	0.281 ^a
State hospital	42 (27.30)	59 (34.30)	
Private hospital	11 (7.10)	15 (8.70)	
HP eradication therapy, (%)			
Yes	10 (6.50)	17 (9.90)	0.268 ^b
No	144 (93.50)	155 (90.10)	
Antibiotic use in the last one year, (%)			
Yes	94 (61)	113 (65.70)	0.383 ^d
No	60 (39)	59 (34.10)	

The data are expressed as n (%); b: Pearson's Chi-Square test; d: Fisher's Exact Test.

receive such therapy was 12 points, and the difference was statistically significant (p=0.024). The HL score was 13 points in patients who had used antibiotics in the last one year and 12 points in patients who had not, showing a significant difference between the groups (p=0.002).

The HL scores of the groups did not differ significantly concerning HP status, smoking status, alcohol consumption, milk consumption and history of gastroscopy (Table 3).

Discussion

In the present study sample, subjects with a high HL score exhibited more hygienic behaviors. An increase was noted in clean water consumption, pasteurized milk consumption, and use of bathroom tissue as HL increased. The pursuit of HP eradication therapy was remarkable in increasing health literacy.

Helicobacter pylori are found in the environment, although

Table 3. Comparison of the HL scores

	n	Health literacy score	p
Helicobacter pylori			
Positive	154	13 (3:23)	0.516 ^a
Negative	172	13 (4:17)	
Smoking			
Yes	85	13 (4:23)	0.237 ^a
No	241	12 (3:17)	
Alcohol			
Yes	4	12.50 (10:14)	0.765 ^a
No	322	13 (3:23)	
Water consumption			
Tap	184	12 (5:17)	0.002 ^a
Bottled	142	13 (3:23)	
Milk Consumption			
Loose	190	12 (5:17)	0.431 ^a
Pasteurized	136	13 (3:23)	
Use of bathroom tissue			
Yes	290	13 (3:23)	0.018 ^a
No	36	12 (6:17)	
History of Gastroscopy			
No	199	12 (3:17)	0.320 ^e
State hospital	101	13 (4:23)	
Private hospital	26	13 (9:16)	
HP eradication therapy			
Yes	27	14 (9:23)	0.024 ^a
No	299	12 (3:17)	
Antibiotic use in the last one year			
Yes	207	13 (4:23)	0.002 ^a
No	119	12 (3:17)	

The data are presented as median (minimum: maximum); ^a: Mann-Whitney U-test, ^e: Kruskal Wallis test.

in which segment of the population, this agent will cause an established disease in the gastric mucosa is yet to be understood^[13]. Various etiological causes reported in the literature, such as smoking, obesity, history of HP eradication therapy and history of gastroscopy, which have been found not to be associated with HP positivity^[3]. The present study is based on histopathological examination results, which are the gold standard for HP detection. In the study sample, HP positivity was probably affected by causes other than the causes investigated in the present study. The identification of this microorganism and the treatment of infected individuals are important public health problems given that the microorganism plays a role in the etiopathogenesis of peptic ulcer and gastric cancer. Further studies of this disease are required, which unfortunately has a high

prevalence in this geographic region.

The association between health literacy and hygienic behaviors is an expected finding^[10–12]. The Public Health Literacy scale is a knowledge scale that assesses the health knowledge of individuals, and the tendency of individuals with knowledge of healthy living to engage in hygienic behaviors is a reflection of their endeavors to make use of this knowledge. Pasteurized milk is safer than loose milk, and studies have revealed that bottled water is safer than tap water^[14]. Although the cleanliness of town water has been demonstrated through water analyses, it is a common notion that bottled water is much cleaner. In addition, studies have also demonstrated the importance of using bathroom tissue for personal hygiene^[15]. Volunteers with higher health literacy scores were more careful in this regard. HP is widely found in the environment and ingested by humans, although the bacteria do not cause infection in all individuals^[13]. It has been noted, however, that hygienic behaviors fail to prevent HP infection.

The three main components of health literacy are disease prevention, improvement of health and access to healthcare services^[16]. The present study found a relationship between access to healthcare services and health literacy. Similarly, previous studies have found that individuals with a higher health literacy score experienced greater success in the treatment of chronic diseases^[17, 18]. For example, a decrease in HbA1c levels was noted with increasing health literacy in patients with diabetes mellitus^[19]. The mean doses of drugs inhaled in patients with chronic obstructive pulmonary disease increase as health literacy decreases^[20]. The rate of accessing bariatric surgery as the mean of definitive therapy increases with increasing health literacy in the morbidly obese^[21]. These examples can be extended further, and the present study identifies an association between health literacy and seeking eradication therapy in patients with HP infection.

Limitations

This study has various limitations, one of which is its single-center study design, which prevents the results of the present study from being generalized. In addition, the use of a validated scale would be better, although the “Facts for Life” were considered to be sufficiently internationally known, and so no validation was sought^[22].

Conclusion

In conclusion, health literacy was found to be associated with the pursuit of therapy in the respondents with HP in-

fection. Health literacy is associated with hygienic behavior, although such behaviors were not found to be associated with HP positivity. Although the individuals exhibit hygienic behaviors, other causes can be suggested as influential in the occurrence of the disease.

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