

# The Prevalence of *Helicobacter pylori* in Northern Cyprus: A Retrospective Study

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## Abstract

**BACKGROUND/AIMS:** The aim of this study was to evaluate *Helicobacter pylori* (*H. pylori*) prevalence in Northern Cyprus.

**MATERIALS AND METHODS:** From December 2012 to April 2018, we retrospectively enrolled 1226 patients aged over 18 with *H. pylori* positivity who presented at outpatient clinics with dyspeptic complaints. Age, gender and ethnicities were evaluated from the data of patients

**RESULTS:** *H. pylori* positivity was detected in 286 of the 1226 patients (23.3%). The female positivity rate was 21% (147/693) and the male positivity rate was 26% (139/533). *H. pylori* positivity was found in 119 of 599 (19.8%) patients in the citizen of TRNC (The Turkish Republic of Northern Cyprus) and 148 of 571 patients (25.6%) in citizen of TR (The Turkish Republic).

**CONCLUSION:** *H. pylori* is a still common infection, although with decreasing frequency. Despite the fact that TRNC is an eastern Mediterranean country, the prevalence of *H. pylori* in TRNC is much lower than other Southeast Mediterranean countries.

**Keywords:** *Helicobacter pylori*, prevalence, Cyprus

## INTRODUCTION

*Helicobacter pylori* (*H. pylori*) is the main cause of gastric ulcer, duodenal ulcer, and non-ulcer dyspepsia.<sup>1</sup> It is also an important risk factor for stomach cancer.<sup>2</sup> Worldwide, more than 50% of the population is infected with *H. pylori*. It is more commonly found in developing countries<sup>3</sup> due to risk factors including low socioeconomic levels, poor hygiene conditions, and overcrowding.<sup>4</sup> Both non-invasive and invasive tests can be used for *H. pylori* diagnosis. The most commonly used non-invasive tests are the urea breath test, the stool antigen test, and serology. The invasive tests are histology and the campylobacter-like organism (CLO) test. The urea breath testing and stool antigen testing are favored due to their easy implementation and reasonable cost.<sup>5</sup> *H. pylori* is highly prevalent throughout the world, although its prevalence is declining. In a nationwide study in Australia with 1355 participants,

the infection prevalence varied between 5%–32% with a higher prevalence in low-socioeconomic cities.<sup>6</sup> In Europe, it is more common in eastern European countries than in western European countries.<sup>7,8</sup> In a study in Denmark, the average prevalence of *H. pylori* infection was determined to be 20%.<sup>9</sup> The seroprevalence in Israel was determined to be 45%<sup>10</sup> and the Turkey *Helicobacter pylori* Prevalence (TURHEP) study designed in Turkey in 2003 found the prevalence of *H. pylori* to be 82.5% in the population over the age of 18 years of age.<sup>11</sup> However, no research study had been performed in Northern Cyprus regarding the prevalence of *H. pylori* to date. As previously mentioned, there is a high prevalence of *H. pylori* in Turkey and other southeastern Mediterranean countries. Therefore, the aim of this study was to determine the prevalence of *H. pylori* in Northern Cyprus.

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## MATERIALS AND METHODS

Patients over 18 years of age who were admitted to the gastroenterology and internal medicine department with dyspeptic complaints from December 2012 to April 2018 and evaluated for *H. pylori* infection were included in this study. In a total of 1226 patients, *H. pylori* serology was detected using the stool antigen and urea breath test results from the hospital database. The results for post-eradication control were not included in this study. The files of the patients who were evaluated for *H. pylori* infection were examined and *H. pylori* test results were noted in terms of age, sex, and ethnicity. The patients were divided into age groups of 18–30, 30–40, 40–50, 50–60, and over 60 years of age. The patients were also divided by ethnicity as Turkish Republic of North Cyprus (TRNC) citizens, Turkish Republic (TR) citizens, and those from Middle Eastern countries. Ethics committee approval was received from the Ethics Committee of Scientific Research (31.05.2018-58/578).

### Statistical Analysis

The data were analyzed using the Statistical Package for Social Science software version 24.0 (IBM Corp., Armonk, NY, USA). The frequencies for the age groups, sex, and ethnicity were calculated. The data were expressed as percentiles and numbers.

## RESULTS

*H. pylori* positivity was detected in 286 of 1226 patients (23.3%) with 147 of the 693 (21%) females showing *H. pylori* positivity and 139 of 533 males (26%). One hundred and nineteen (19.8%) of the 599 TRNC citizenship patients were *H. pylori* positive. For the TR citizens, 148 (25.6%) out of 571 patients were *H. pylori* positive and 12 (36.4%) out of the 33 patients from Middle Eastern countries were *H. pylori* positive. When *H. pylori* positivity was examined according to age, 133 out of 517 patients were aged 18–30 (25.8%), 48 out of 206 patients were 30–40 years of age (25.8%), 39 out of 170 patients were 40–50 years of age (22.9%), 40 out of 176 patients were 50–60 years of age (22.7%), and 26 out of 159 patients were 60 years of age or older (16.4%). When the distribution of *H. pylori* positivity was examined according to age and ethnicity the 18- to 30-year-old TRNC patients had statistically significantly lower *H. pylori* positivity ( $p < 0.05$ ).

## DISCUSSION

To the best of our knowledge, this is the first prevalence study performed on *H. pylori* in TRNC. The primary findings of this study were that Cypriot Turks have a lower *H. pylori* positivity compared to citizens of Turkey and Middle Eastern countries.

*H. pylori* is the most common chronic infection in the world. Its prevalence varies between countries and populations due to social and economic features. Its prevalence is much more common in developing countries but this is decreasing. In Japan, *H. pylori* prevalence in individuals born before 1950 is over 90%, while those born after 2000 are at a 2% level.<sup>12</sup> In 1992, the prevalence of *H. pylori* in Taiwan was 54.4%, but in a recent study, its prevalence in asymptomatic patients was 21.2% and 37.9% in patients with dyspepsia.<sup>13</sup> A Turkish study conducted with a pediatric population compared the years 2002–2003 and 2012–2013 and found that the prevalence of infection decreased from 48% to 23%.<sup>14</sup>

The current study is the first study concerning the prevalence of *H. pylori* infection in Northern Cyprus and it found a very low prevalence compared to the surrounding countries. The disease is more common in developing countries than in developed countries. In European countries, the prevalence is 20%–40%, and in Belgium, *H. pylori* prevalence is 11%.<sup>15</sup> However, the infection prevalence in developing countries is extremely high. For example, *H. pylori* prevalence is 79% in Kazakhstan, 95%–100% in Indonesia and 88.3% in Serbia. Recent prevalence studies show 41% of asymptomatic patients from the United Arab Emirates are infected and 44.5% of the asymptomatic population are infected with *H. pylori* in northern Iran.<sup>16,17</sup> A recent prevalence study from Jordan showed very high seropositivity (88.6%).<sup>18</sup> According to the TURHEP study carried out in Turkey in 2003, the prevalence of *H. pylori* infection was found to be 82.5%. In addition, *H. pylori* prevalence is over 80% in southeast Mediterranean countries.<sup>19</sup> The current study found *H. pylori* frequency to be 23.3%. Although Cyprus is an eastern Mediterranean country, the prevalence of the disease is quite low in comparison to its geographic region and is similar to European countries. This may be attributed to a stable socio-cultural structure, high education level, better hygiene conditions, and a lack of overcrowding in the population.

In a study conducted by Perez-Perez et al.<sup>20</sup>, the prevalence of *H. pylori* in Turks living in Germany was 30.4%, which was a lower prevalence in Turkey. In our study, *H. pylori* prevalence was 19.8% among Cypriot patients and 25.6% among Turkish patients who were born in Turkey but lived in Cyprus. Compared with the studies performed in Turkey, both Cypriot and Turkish patients who lived in Cyprus had a lower prevalence. It could be suggested that these results are related to the non-crowded population of Cyprus and that Turks living there enjoy a better socio-cultural structure.

When disease frequency was evaluated according to age, the lowest frequency of *H. pylori* infection was for those over 60 years and the infection was most commonly detected between 30–40 years of age. Our results are compatible with previously published results. Meyer et al.<sup>21</sup> stated that this may be related to a spontaneous remission of infection through aging. However, in a study from Armenia, *H. pylori* seropositivity was most commonly detected in patients over 60 years old.<sup>22</sup> This may be related to a lack of evaluation and treatment of *H. pylori* in dyspeptic patients. We detected the lowest prevalence in individuals over 60 years of age and believe that this was related to a spontaneous remission of infection through aging and the successful evaluation and treatment of *H. pylori* in Northern Cyprus in recent years.

Our study was a retrospective study and we only evaluated age, gender, and ethnicity. Also, we only evaluated dyspeptic patients. These were the limitations of our study. Prospective studies on this subject may be planned to evaluate an asymptomatic population with more demographic features.

*H. pylori* is still a common infection but with a decreasing frequency. Despite the fact that TRNC is an eastern Mediterranean country, the prevalence of *H. pylori* in TRNC is much lower than in other southeastern Mediterranean countries. More cohort studies are needed which include quality of life and education levels in both dyspeptic and asymptomatic populations.

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## MAIN POINTS

- *H. pylori* is a still common infection, but with decreasing frequency all over the world. Worldwide, more than 50% of the population is infected with *H. pylori*.
- *H. pylori* is commonly found in developing countries due to risk factors including low socioeconomic levels, poor hygiene conditions, and overcrowding.
- Despite the fact that TRNC is an eastern Mediterranean country, the prevalence of *H. pylori* in TRNC is much lower than in other southeastern Mediterranean countries.

## ETHICS

**Ethics Committee Approval:** Ethics committee approval was received from the Near East University Ethics Committee of Scientific Research. (date and number: 31.05.2018-58/578)

**Informed Consent:** Informed consent was not taken because this was a retrospective study.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

Concept: Ö.S., T.U., Design: Ö.S., T.U., E.E.S., Supervision: Ö.S., T.U., Data Collection and/or Processing: Ö.S., T.U., Analysis and/or Interpretation: T.U., E.E.S., Literature Search: Ö.S., E.E.S., Writing: Ö.S., T.U. E.E.S., Critical Reviews: T.U., E.E.S.

## DISCLOSURES

**Conflict of Interest:** The authors have no conflicts of interest to declare.

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