

## Distribution of *Helicobacter pylori* Infection among Gastric Cancer in Hiwa Hospital, Sulaimani City

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### ABSTRACT

**Background:** The association between gastric cancer and *H. pylori* infection has been supported in very few studies. In this regard, the present study was carried out in order to examine how of *H. pylori* infection is distributed among gastric patients.

**Methods:** The present study was a single cohort in which 190 patients who were clinically diagnosed with gastric cancer were recruited. The patients' records were utilized in order to collect data on *H. pylori* infection. The collected data were analyzed through descriptive statistics using SPSS software version 21.

**Results:** The results indicated that history of *H. pylori* infection was observed in 63.2% of the patients with gastric cancer. Moreover, prevalence of gastric cancer was more among females (61.5%), residents of rural areas (57.9%), and patients aged over 50 years (73.6%).

**Conclusion:** *H. pylori* infection was found to be more prevalent among patients with gastric cancer. Future studies are recommended to focus on larger samples in order to generalize the results in the Kurdistan Region.

**Key words:** Gastric cancer, *Helicobacter pylori*, Infection

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### INTRODUCTION

It has been reported that gastric cancer (GC), which is one of the most prevalent tumors, afflicts one million new cases every year throughout the world [1]. Given the fact that gastric cancer is diagnosed in advanced stages in most cases and with poor prognosis and restricted therapy options, it is clinically regarded as a major challenging disease all over the world. GC develops in a multi-factorial and complex process, involving some etiological factors and several epigenetic and genetic alterations [2].

*Helicobacter pylori* infection is referred to as the strongest risk factor that is recognized for gastric adenocarcinoma. Although colonies of this bacterial species can be found in the stomach of over half of the world's population, adenocarcinoma afflicts only a very small percentage of

subjects. *H. pylori* can lead to chronic gastritis which might last for decades. Moreover, for the most frequent histological type of gastric adenocarcinoma, a multistep precancerous process has been recognized [3].

Limited data exist on *H. pylori* infection prevalence among patients with gastric cancer in the Kurdistan Region of Iraq. According to the available non-official reports revealed that *H. pylori* infection is highly prevalent among gastric cancer patients. In this regard, the present study was aimed at figuring out the prevalence of *H. pylori* infection among gastric cancer patients who had referred to Hiwa Hospital in Sulaimani province, the Kurdistan Region of Iraq.

### MATERIALS AND METHODS

The present investigation was a prospective study which was carried out through a single cohort that consisted of 190 patients who had referred to Hiwa Hospital during a period of 6 months during 2018. Before conduction of the

data collection, each of the patients filled out a consent form.

Required medical data were collected from the patients via a structured questionnaire which was composed of two parts. The first part aimed to gather the patients' socio-geographical information including their age, gender, place of living, and job.

The second part was used to collect the patients' medical data including cancer types, cancer stage, hematological and histological data, and serological result on *H. pylori* infection.

The collected data were encoded and fed into SPSS version 22, and descriptive statistics including frequency, percentage, mean and standard deviation was utilized.

**RESULTS**

**Demographic characteristics of patients**

A total number of 190 patients participated in the present study (n=190), of whom 117 (61.5%) were females and 73 (38.4%) males. The participants' mean age was 61.4 years old (with a range from 28 years to 92 years of age).

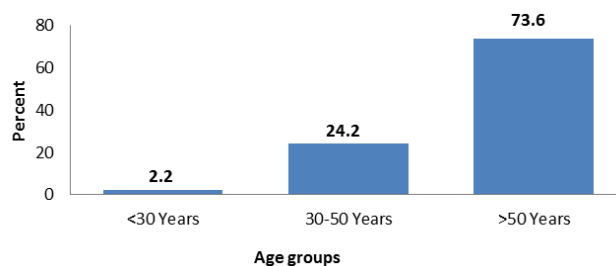
Regarding the patients' place of living, the results indicated that 110 (57.9%) resided rural areas and 80 (42.1%) urban regions. Most of the patients (29.5%) were housewives, followed by unemployed at 27.4%, workers with 23.2%, and governmental staff with 6.8%, police officers with 6.3%, teachers with 4.7%, and students with 2.1% (Table 1).

**Table 1: The patients' demographic characteristics**

The patients' characteristics		No.	%
Gender	Male	73	38.4
	Female	117	61.5
Residency	Urban	80	42.1
	Rural	110	57.9
Occupation	Housewife	56	29.5
	Student	4	2.1
	Police & Peshmarga	12	6.3
	Teacher	9	4.7
	Governmental staff	13	6.8
	Worker	44	23.2
	Non-employment	52	27.4

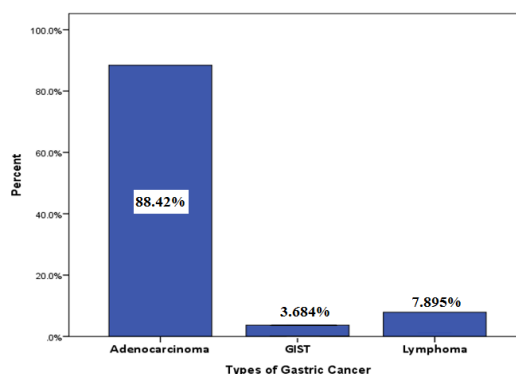
**Distribution of the patients' age**

According to the distribution of patients' age in the present study, it was seen that 73.6% of them aged over 50 years, 24.2% between 30 years and 50 years, and 2.2% less than 30 years (Figure 1).



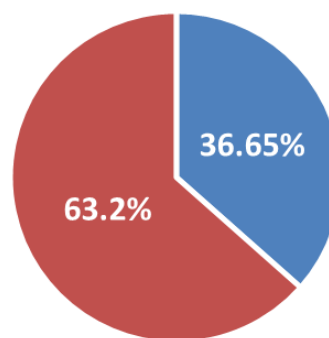
**Figure 1: Distribution of patients' age**

It was observed that 88.4%, 7.8%, and 3.6% of the patients had adenocarcinoma, lymphoma, and GIST, respectively (Figure 2).



**Figure 2: Distribution of histological cancer types among the patients**

According to the data analysis, history of *H. pylori* infection was seen among approximately 63.2% of the patients, whereas 36.65% of them did not have such a history (Figure 3).



**Figure 3: Distribution of *H. pylori* infection among the patients**

**DISCUSSION**

Known as the fourth most common cancer, gastric cancer has been reported as the second leading cause of cancer-induced deaths [4]. Suitable management of treatment and increased survival rate can be highly influenced by early diagnosis and consideration of other factors including age, gender, positive family history, and stage.

In the present study, based on the relationship between the patients' age distribution and gastric cancer occurrence indicated that 73.6% of the patients were over 50 years old, 24.2% between 30 years and 50 years

old, and 2.2% under 30 years old, which reveals that there is a positive correlation between age and gastric cancer prevalence. Similar finding has been reported by Zeinalzadeh et al. who studied the association between age pattern and different types of cancer in Eastern Azerbaijan province of Iran. They reported  $65 \pm 13.5$  years as the patients' mean age of gastric cancer [5]. In terms of adenocarcinoma distribution, most of the patients (74.2%) in the present study had adenocarcinoma, while small number of them (25.8%) did not. This finding is in good agreement with those of the study conducted by Rhome et al. who focused on the survival rate among patients with gastric adenocarcinoma in Yazd, Iran. According to the results of their study, 2- and more than 2-year survival rates were respectively 50% and 30% with a mean survival rate of 29.97 [6]. This supports the fact that most cases of gastric cancer were associated with adenocarcinoma [7].

The results of the present study also showed that gastric cancer is more prevalent among females than males. This finding is in line with the previous study conducted by Yu et al. who revealed that the male-to-female ratio of gastric cancer prevalence among Asian GC patients was higher than that of non-Asian GC cases (1.450 vs. 0.614,  $p=0.01$ ) [8]. Furthermore, the results of the present investigation showed that gastric cancer was more prevalent in rural areas than urban ones. This finding is in not in agreement with those of the study conducted in Spain, indicating higher incidence in urban than rural areas. This discrepancy can be contributed first to the people's poverty, lack of medical facilities, and lack of knowledge about gastric cancer [9].

A large number of studies have reported a close association between a *H. pylori* infection and cancer, peptic ulcer, and mucous membrane infection of stomach wall [10]. Although the exact mechanism whereby *H. pylori* bacterium contributes to gastric cancer development is not completely understood, the World Health Organization (WHO) has categorized this bacterium as group 1 carcinogen [11]. Research has demonstrated that the risk of gastric cancer development in patients with *H. pylori* infection increases seven folds compared to those who did not have such an infection. It has also been reported that *H. pylori* infection associated with *VacA* (vacuole-located cytotoxin A) and *cagA* genes (cytotoxin-associated gene A) leads to more severe infection [12].

### CONCLUSION AND LIMITATIONS

Gastric cancer was more prevalent among patients of over 50 years old, females, and residents of rural areas. Therefore, much attention should be paid to early diagnosis and well-organized treatment in these three groups of patients. The most outstanding limitation of the present study was the small size of its sample chosen from only one center, which might limit the generalizability of the findings. In this regard, future studies are recommended to study larger samples.

### CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this study.

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