

## Impact of the Covid-19 pandemic on endoscopic activity, gastric and colorectal cancer detection rate

Gastric and colorectal cancer pre and during pandemic

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### Abstract

**Aim:** The COVID-19 pandemic has adversely affected health systems all over the world and has caused more than 3 million deaths to date. This has caused delays in the diagnosis and treatment of cancer and many diseases due to disruptions in health services and the hesitation of patients to apply to health institutions during the pandemic period.

**Material and Methods:** In the current study, the electronic records of health centers in Erzincan were retrospectively examined and the cases that underwent gastric and colonic endoscopic biopsy between January 2019 and January 2021 were identified. The cases were divided into two groups as the pre-pandemic group that underwent endoscopic biopsy between January 2019 and 2020, and the pandemic group, where the endoscopic biopsy was performed between 2020 and 2021.

**Results:** There was a significant decrease in the number of gastric and colon endoscopic biopsies and gastric cancer, although there was no abnormal population movement and no new healthcare institution in the province the pre-pandemic period and during the pandemic period.

**Discussion:** The findings of the current study showed that there was a significant decrease in the number of gastric and colon endoscopic biopsies and gastric cancer cases during the pandemic period. In addition to the primary health problems associated with severe acute respiratory syndrome - coronavirus 2 (SARS-CoV-2) infections during the pandemic period, delays in the detection of cancer and precancerous lesions due to the decrease in the number of endoscopic biopsies may cause significant problems in the future.

### Keywords

COVID-19; Pandemic; Gastric Cancer; Endoscopic Biopsy; Colorectal Cancer

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## Introduction

The severe acute respiratory syndrome - coronavirus 2 (SARS-CoV-2) infection, which was first identified in Wuhan, China in late 2019, was declared a pandemic in March 2020 (available at: <https://www.bbc.com/news/world-51839944>). The pandemic has put enormous pressure on healthcare systems around the world [1]. It has caused the death of more than 3 million people so far (available at: <https://ourworldindata.org/coronavirus>). The fear of getting sick caused hesitation in applying to the hospital, especially in those with chronic diseases and elderly patients [2]. This problem can cause diagnostic delays in many diseases.

Cancer is one of the leading causes of death, and the average life expectancy of the disease is closely related to the disease stage at the time of diagnosis [3]. Early diagnosis and treatment are vital in cancer patients [4].

Gastric cancer is the fifth most common malignancy and is the third most common cause of cancer-related death [5]. It is most common in the 50-70 age groups and more often in men [6]. Symptoms such as dyspepsia, vomiting, and dysphasia can be seen in gastric cancer. Since these findings can be observed in many different diseases, gastrointestinal endoscopy plays an important role in the differential diagnosis [7]. In addition, endoscopic biopsy in gastric cancer will provide early diagnosis of gastric cancer; it will reduce the risk of cancer development because it will provide the diagnosis and early treatment of helicobacter pylori, which is effective in the development of gastric cancer [8].

Colorectal cancer is the third most common malignancy and the second most common cause of cancer-related death [9]. Colon cancers occur equally in men and women, with the average age of 62 years [10]. Colonoscopic screening is recommended to begin at the age of 50 to diagnose early-stage colorectal cancers [11]. Colonoscopic biopsy in colorectal cancers is very important for diagnosis, removal of a polyp that may be a tumor precursor, and determination of the appropriate treatment as a result of pathological examination [12].

The aim of this study is to emphasize that delay in the number of endoscopic and colonoscopic biopsies and cancer diagnoses during the COVID-19 pandemic may cause significant problems in the morbidity and mortality rates of patients in the future.

## Material and Methods

Ethical approval was received from Erzincan Binali Yıldırım University clinical research ethics committee, dated May 24, 2021 and numbered 07/08. In the current study, the pathology archives of all health centers (Erzincan Binali Yıldırım University Mengücekgazi Training and Research Hospital, Private Neon Hospital) in Erzincan were retrospectively examined, and cases that underwent gastric and colonic endoscopic biopsy between January 2019-January 2021 were identified. The cases were divided into two groups as a pre-pandemic group that underwent endoscopic biopsy between January 2019 and January 2020, and a pandemic group, who underwent endoscopic biopsy between 2020 and 2021. Pathology reports of the cases were examined and cases cancer were identified. The age range and mean age for both gastric and colorectal cancer types were determined and compared to non-cancerous

cases. The cases were divided into groups according to their gender, and it was evaluated whether there was a difference in cancer incidence according to gender. The number of patients who underwent gastric and colon endoscopic biopsy and the number of patients diagnosed with cancer were compared in the pre-pandemic period and during the pandemic period. The data were evaluated by a simple statistical method. The results were expressed as percentages.

## Results

The number of gastric endoscopic biopsies in the pre-pandemic period was 2711 and during the pandemic period, it was 1297. The number of cases detected with gastric cancer was 49 in the pre-pandemic period and 35 during the pandemic period. The age range of gastric cancer cases was 40-93, the average age was 69. The average age in non-cancer cases was 53. In the distribution of gastric cancer cases by gender, the incidence rate in men was higher than in women, 61% of cases were men. According to the number of endoscopic biopsies, the rate of gastric cancer was 1.8% in the pre-pandemic period and 2.7% during the pandemic period. Detailed gastric endoscopic biopsy and gastric cancer cases rates for the pre-pandemic and during the pandemic period are given in Table 1.

The number of colonoscopic biopsies in the pre-pandemic period was 419, and it was 333 during the pandemic period. The number of detected cases of colorectal cancer was 39 in the pre-pandemic period and 38 during the pandemic period. The age range of colorectal cancer cases was 35-87, the average age was 64. The average age in non-cancer cases was 55. In the distribution of colorectal cancer cases by gender, the incidence rate in men was higher than in women, 58% of cases were men. According to the number of colonoscopic biopsies, the rate of colorectal cancer was 9.3% in the pre-pandemic period and 11.4% during the pandemic period. The detailed colonoscopic biopsy and colorectal cancer cases rates for the pre-pandemic and during the pandemic period are given in Table 2.

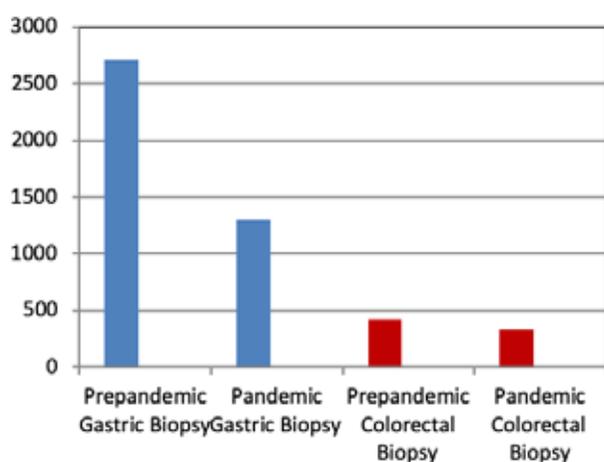
During the pandemic period, there was a significant decrease in the number of gastric endoscopic biopsies and colonoscopic biopsies, especially in gastric endoscopic biopsies. The

**Table 1.** Distribution of gastric endoscopic biopsies in pre-pandemic and during the pandemic periods

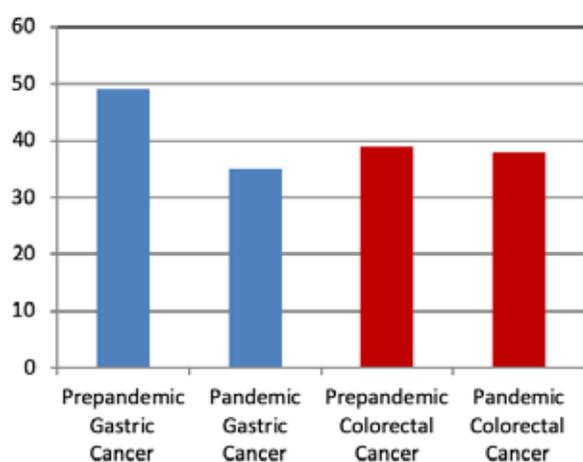
Gender	Prepandemic period (2019-2020)			Pandemic period (2020-2021)		
	Gastric Cancer	Non-cancer	Total	Gastric Cancer	Non-cancer	Total
Male	28	1188	1216	23	596	619
Female	21	1474	1495	12	666	678
Total	49	2662	2711	35	1262	1297

**Table 2.** Distribution of colorectal endoscopic biopsies in pre-pandemic and during the pandemic periods

Gender	Prepandemic period (2019-2020)			Pandemic period (2020-2021)		
	Colorectal Cancer	Non-cancer	Total	Colorectal Cancer	Non-cancer	Total
Male	25	199	224	20	154	174
Female	14	181	195	18	141	159
Total	39	380	419	38	295	333



**Figure 1.** Gastric and colorectal endoscopic biopsies in pre-pandemic and during the pandemic periods.



**Figure 2.** Gastric and colorectal cancer cases in pre-pandemic and during the pandemic periods.

decrease in the number of gastric endoscopic biopsies during the pandemic period compared to the pre-pandemic period was 52%, and the decrease in the number of colonoscopic biopsies was 21% (Figure 1).

While there was a significant decrease in the number of gastric cancer cases detected during the pandemic period, the decrease in the number of colorectal cancers was minimal. There was a 29% decrease in cases with gastric cancer in the pandemic period compared to the pre-pandemic period, and a 3% decrease in cases with colorectal cancer (Figure 2).

### Discussion

COVID-19 pandemic caused more than 150 million sicknesses and over 3 million deaths so far (available at: <https://ourworldindata.org/coronavirus>). The fear of getting SARS-CoV-2 infection caused hesitation in patients when applying to the hospital [2].

Early diagnosis is important in cancer treatment, and fear of going to the health institutions, especially in chronic and elderly patients, due to the pandemic, and malfunctions in the health system may cause delays in cancer diagnosis [13]. Diagnoses and treatments delayed due to the pandemic will affect the progression of cancers and long-term survival of patients [14]. As pointed out by Helsper CW et al, cancer has not disappeared during the pandemic, so it is important to make arrangements

for early detection of cancer and care of cancer patients [15]. Maringe C et al. evaluated the impact of the COVID-19 pandemic on cancer deaths due to the delay in diagnosis in a study involving lung, breast, colorectal and esophageal cancers. In their study, they assessed that diagnostic delay due to the COVID-19 pandemic in the United Kingdom would lead to significant increases in the number of preventable cancer deaths [16]. In the study conducted by Rutter et al., they detected that there was a significant decrease in cancer detection rates as a result of the decrease in the number of endoscopic biopsies during the COVID-19 period. In their study, they reported a 52% decrease in the number of gastric cancer cases and a 72% decrease in the incidence of colorectal cancer during the pandemic period compared to the pre-pandemic period [17]. Similarly, Kaufman HW et al. detected that there was a decrease in the number of endoscopies during the pandemic period, and a 50% reduction in colorectal cancer diagnoses as a result [18].

In the current study, it was found that there was a significant decrease by 52%, 21% and 29% in the number of gastric endoscopic biopsy, colonoscopic biopsy, gastric cancer cases in the pandemic period compared to the pre-pandemic period, respectively. Considering that there was no abnormal population movement in the province or there was no new health institution service, we think that the reason for the decrease in the number of endoscopic biopsies and gastric cancer diagnoses during the pandemic period may be the hesitation of people to go to the hospital during this period. Arrangement of appropriate physical environments for endoscopic biopsy units can reduce these hesitations of the patients.

The decrease in the number of colon cancer cases was only 3%. Another remarkable finding was that the number of colon biopsies was very low compared to the number of gastric biopsies in both pandemic and pre-pandemic periods, and the rate of cancer according to the number of biopsies was higher in colorectal cancers compared to gastric cancer. In our opinion, the reason for the low rate of decrease in colorectal cancers during the pandemic and the low number of colon biopsies compared to the number of gastric biopsies may be that patients do not go to the hospital for colonoscopy because they are embarrassed and afraid unless they have very serious symptoms in both periods. In our opinion, this problem may be a geographical and cultural that must be overcome through education and providing people with more information.

The limitations of this study were retrospective design and small sample size. Further multi-centric studies to be carried out in the post-pandemic period will reveal more clearly the effect of the pandemic on the decrease in endoscopic biopsy and cancer detection rates and in the general health area.

In conclusion, it should be noted that during the pandemic period, there was a significant decrease in the number of gastric and colon endoscopic biopsies and gastric cancer cases. In addition to the primary health problems associated with severe acute respiratory syndrome - coronavirus 2 (SARS-CoV-2) infections during the pandemic period, delays in the detection of cancer and precancerous lesions due to the decrease in the number of endoscopic biopsies may cause significant problems in the future.

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### Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

### Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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### Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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