

## Changes in cancer screening process in primary care during the covid-19 pandemic. A record-based descriptive study

Yıldız Büyükdereveli Atadağ, MD, Ahmet T. Türkmen, MD, Ahmet Öksüz, MD, Hamit S. Keten, MD, Muhammet R. Aydın, MD.

### ABSTRACT

**Objectives:** To reveal the number of cancer screenings in primary care during the pandemic period and whether there is a change in screening compared to the pre-pandemic period.

**Methods:** This record-based descriptive study was carried out by evaluating the number of people who applied to family health centers or cancer early diagnosis, screening, and education center (KETEM) units for cancer screening (breast, cervical, and colorectal) for any reason. The study data were scanned between January 2017 and December 2020 and were obtained from the Gaziantep Provincial Health Directorate Cancer Branch.

**Results:** Breast cancer screening was the highest in December 2019 (n=2971), cervical cancer screening was the highest in October 2019 (n=4693), and colon cancer screening was the highest in September 2019 (n=2464). Breast cancer screening was the lowest in August 2020 (n=0), cervical cancer screening was the lowest in May 2020 (n=6), and colon cancer screening was the lowest in February and March 2018. Although the target populations and percentages in breast cancer, cervical cancer and colon cancer screenings increased with the following years, the screening populations and percentages decreased in 2020 compared to other years (percentages, 4.4%, 6.2%, 1.9%).

**Conclusion:** For cancers that can be prevented by early diagnosis, it is of great importance to increase cancer screenings, which have decreased with the pandemic, to the required level.

**Keywords:** pandemic, cancer screenings, primary care, Covid-19

*Saudi Med J 2023; Vol. 44 (6): 621-624  
doi: 10.15537/smj.2023.44.6.20220580*

Breast, cervical, and colorectal cancer screenings are performed in primary care. Cervical cancer screenings include the papanicolaou test (Pap smear test)

and human papillomavirus (HPV) deoxyribonucleic acid (DNA) testing. Breast cancer screenings are performed with a mammography and breast examination, while colorectal cancer screenings are performed with fecal occult blood (FOB) tests and a colonoscopy.<sup>1</sup>

Women should start getting Pap smear tests from ages 30-65 (including the ages of 30 and 65), with an HPV or Pap smear test every 5 years in Turkey.<sup>2</sup> The breast cancer screening program in Turkey invites women aged 40-69 to undergo digital/conventional mammography every 2 years. A breast examination is also recommended for every woman screened to increase effectiveness. Women older than 20 should be advised to perform breast self-exams.<sup>3</sup> For colorectal cancer screening, everyone between ages 50 and 70 should have an FOB test every 2 years and a colonoscopy every 10 years. Screening is recommended after age 40 for those with a first-degree relative and a history of colorectal cancer or adenomatous polyps.<sup>4</sup>

During the pandemic, the Ministry of Health directed patients primarily to family health centers (FHCs) to reduce the potential crowding of secondary and tertiary healthcare providers. With this practice, a plan and program were made on how to conduct such services in primary care, aiming to reduce the density that may occur in FHC and the associated risk of disease transmission.<sup>5</sup> These plans recommended that cancer screenings be temporarily postponed.

This study aimed to reveal the extent to which routine cancer screenings in primary care could be performed during the pandemic and whether there has been a change compared to the pre-pandemic period.

**Methods.** This record-based descriptive study was carried out by evaluating the number of people who applied to family health centers or cancer early diagnosis, screening, and education center (KETEM) units for cancer screening (breast, cervical, and colorectal) for any reason. The cancer screening tests currently performed in our country for breast cancer: i) mammography is performed between the ages of 40-69, ii) cervical cancer with Pap-smear and HPV analysis between the ages of 30-65, and iii) colorectal cancer screening with stool occult blood test between the ages of 50-70 years. The data of these screening tests are recorded in the family medicine information systems used in the

**Disclosure.** Authors have no conflict of interests, and the work was not supported or funded by any drug company.

family medicine offices where they are performed, and in the information management systems used in the KETEM units. All data in the province are recorded in the information management systems of the relevant provincial health directorates. The study data were scanned between January 2017 and December 2020 and were obtained from the Gaziantep Provincial Health Directorate Cancer Branch. Screening data consisted of the number of people who were tested on a monthly and annual basis for each cancer screening, as well as screening percentages.

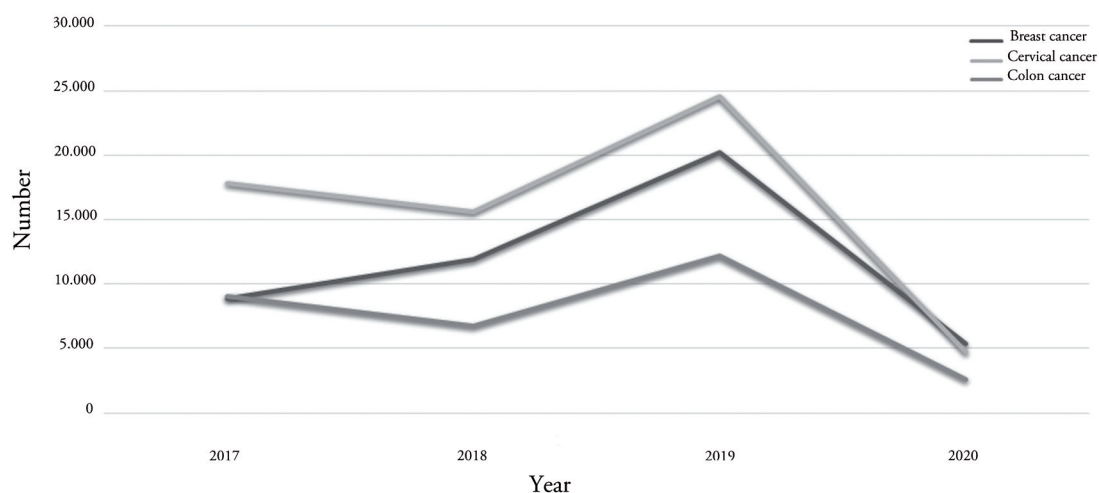
People whose results were not clearly stated in the screening tests, who were described as insufficient samples, and who were recommended to repeat the test or screening were not included in the study. The numbers of people whose results were clearly stated were included in the study.

Gaziantep University Faculty of Medicine Clinical Research Ethics Committee approval was obtained for this study. With registration No. 2021-36. Necessary permission was obtained from the Gaziantep Provincial

Health Directorate. The study was deemed appropriate by the Ministry of Health. The study was carried out according to the principles of the Declaration of Helsinki.

**Statistical analysis.** Statistical analyses were performed using SPSS version 20, (IBM Corp, Armonk, NY, USA). Median and minimum–maximum values were used for analyses. Data were presented with frequency distribution (number, percentage) for categorical variables.

**Results.** This study evaluated 139,608 individuals. Breast cancer, cervical cancer, and colon cancer screening numbers and rates were highest in 2019. Breast cancer, cervical cancer, and colon cancer screening numbers and rates were the lowest in 2020. Breast cancer screening was the highest in December 2019 (n=2,971), cervical cancer screening was the highest in October 2019 (n=4,693), and colon cancer screening was the highest in September 2019 (n=2,464). Breast cancer screening was lowest in August 2020 (n=0), cervical cancer



**Figure 1** - Number of cancer screening by year.

**Table 1** - Cancer screening target populations and realization rates by year.

Years	Target population (n)			Number of screenings			Screening percentage		
	Breast cancer	Cervical cancer	Colon cancer	Breast cancer	Cervical cancer	Colon cancer	Breast cancer	Cervical cancer	Colon cancer
2017	107.064	68.451	118.148	8.865	17.779	9.065	8.3	25.97	7.67
2018	114.182	72.316	123.918	11.930	15.576	6,781	10.4	21.53	5.47
2019	117.952	74.100	127.205	20.237	24.578	12.209	17.2	33.16	9.59
2020	122.794	76.427	132.406	5.364	4.710	2.544	4.36	6.16	1.92

**Table 2** - Number of screenings per month.

Screening	January	February	March	April	May	June	July	August	September	October	November	December	Annual Data
<b>2017</b>													
Breast cancer	702	616	1,149	891	862	205	553	769	510	783	936	889	8,865
Colon cancer	1,306	834	906	875	640	420	690	745	333	616	500	1,200	9,065
Cervical cancer	1,751	1,377	1,833	1,832	1,890	280	1,074	1,844	792	1,714	1,585	1,807	17,779
<b>2018</b>													
Breast cancer	1,133	1,180	1,169	948	612	227	531	277	731	1,730	1,988	1,404	11,930
Colon cancer	600	0	0	63	585	637	618	445	628	1,046	1,536	623	6,781
Cervical cancer	1,198	1,155	1,517	1,171	626	278	695	333	558	3,004	2,602	2,439	15,576
<b>2019</b>													
Breast cancer	1,394	1,782	1,925	1,543	607	624	1,495	1,080	2,178	2,323	2,309	2,971	20,237
Colon cancer	1,258	957	368	571	450	369	1,108	1,441	2,464	584	1,848	791	12,209
Cervical cancer	1,808	1,041	916	1,779	503	597	2,188	1,915	3,346	4,693	2,795	2,997	24,578
<b>2020</b>													
Breast cancer	2,324	1,430	1,074	12	35	84	61	0	94	93	115	42	5,364
Colon cancer	906	772	588	12	10	36	51	32	28	41	30	38	2,544
Cervical cancer	1,958	1,251	1,107	23	6	52	24	50	52	70	70	47	4,710

screening was lowest in May 2020 (n=6), and colon cancer screening was lowest in February and March 2018 (n=0; [Table 1 & 2](#)).

Although the target populations and percentages in breast cancer, cervical cancer, and colon cancer screenings increased with the following years, the screening populations and percentages decreased in 2020 compared to other years (percentages: 4.36%, 6.16%, 1.92%) ([Table 1](#)). Screening tests for breast, cervical and colon cancers continued at a moderate amount until March 2020, but declined drastically by April 2020. This decrease also led to a decrease on a yearly basis. In March 2020, cancer screening numbers were 1072 (breast), 588 (cervix), 1107 (colon). These numbers decreased to 12 (breast), 12 (cervix), 23 (colon) in April 2020 ([Table 2](#)).

**Discussion.** This study evaluated the screening rates among the target populations to be reached by KETEM and family health centers in the province of Gaziantep between January 2017 and December 2020 for colorectal, breast, and cervical cancer screenings included in the national cancer screening program of the Ministry of Health and the impact of the COVID-19 pandemic on these rates.

Cancer screening tests aim to detect cancer before symptoms appear in individuals. Cancers are among the leading causes of death in the world, as well as in Turkey. Cancer screening is believed to provide an early diagnosis, an early treatment, and a cure. In addition, it aims to prevent the shortening of the patient's life expectancy and deterioration of the quality of life. Similar to all early-diagnosed diseases, early diagnosis

is cost-effective in cancers, as the cost of treatment and care for a cancer case caught at an advanced stage is high.<sup>6</sup>

Colorectal cancer symptoms usually appear in advanced stages. Colorectal cancer is a common diagnosable disease in which treatment success increases with early diagnosis. It is one of the most suitable diseases for screening. In addition to protection from colorectal cancer, screening, early diagnosis, and treatment are the most effective ways to reduce mortality. Although there are various screening tests, early diagnosis is very limited due to low compliance. In California, United States of America (USA) there was 48% participation in colorectal cancer screening.<sup>7</sup> In our study, colorectal cancer screenings were observed to be quite low in our country. However, it is also evident that there was a relatively increasing trend until the pre-pandemic period. It was found that this increasing trend was interrupted by the COVID-19 pandemic. Unfortunately, the screenings decreased approximately fivefold in the first year of the pandemic compared to the previous year. This indicates that cases will appear later at higher-level cancer stages.

In addition, mammography screening is an important method that reduces mortality rates by identifying high-risk groups for malignancy in breast cancer.<sup>8</sup> Studies evaluating the willingness of individuals to participate in breast cancer screening have found that, in most countries, the willingness to participate in mammography screenings is quite high, with participation rates above 70%.<sup>8,9</sup> Our study found that screening rates in the target population for breast cancer screening for the years 2017, 2018, 2019, and

2020 to be 26%, 21.5%, 33.2%, and 6.2%. Screening rates indicate that the participation is low, and screening values have dropped dramatically during the pandemic. This situation can also be interpreted as an indication that cases of advanced breast cancer will increase in the future.

The Pap smear test is an easy-to-apply, low-cost, harmless, high-sensitivity test that also reduces treatment burden, mortality, and morbidity.<sup>10</sup> In the USA, the ratio of women having pap smear and HPV-DNA testing was reported as 83%.<sup>11</sup> Since there is no organized screening program in Europe, participation rates ranging from 17% to 79% have been reported in five studies.<sup>12</sup> In our study, the rates in the target population for cervical cancer screening for the years 2017, 2018, 2019, and 2020 were 26%, 22%, 33.2%, and 6.2%. Compared to cancer screenings in developed countries, the screening rates in our study were low. We believe that more attention should be paid to screening in the post-pandemic period due to severe declines in screening rates during the pandemic. Postponing cancer screenings during the pandemic would increase the incidence of advanced cancer and the treatment costs of these cases.<sup>13</sup>

**Study limitations.** This study is a retrospective review, and the reasons for the increases and decreases in the remaining periods before the pandemic period could not be examined in detail. The fact that the study did not cover the late continuation of the pandemic makes it difficult to predict the possibility of delayed cancer diagnoses.

In conclusion, action plans for screening should be made to increase participation in screening and not to interrupt health services in extraordinary situations such as pandemics. New projects are needed to reach the patient groups that were not screened during the pandemic, establish additional screening units to catch up with the rates in the pre-pandemic years, and then increase the rates to reach the levels recorded in developed countries.

**Acknowledgment.** The authors would like to thank Scribendi Inc ([www.scribendi.com](http://www.scribendi.com)) for the English language editing.

Received 30th December 2022. Accepted 11th April 2023.

From the Department of Family Medicine (Atadağ), Abdulkadir Yüksel State Hospital; from the Department of Family Medicine (Keten), Gaziantep University Faculty of Medicine, Gaziantep; from the Department of Family Medicine (Türkmen), Sakarya University Faculty of Medicine, Sakarya; and from the Department of Family Medicine (Öksüz), Mimar Sinan Family Health Center, Sivas, Turkey.

Address correspondence and reprints request to: Dr. Yıldız Büyükdereci Atadağ, Department of Family Medicine, Abdulkadir Yüksel State Hospital, Gaziantep, Turkey. E-mail: [yildizatadag@gmail.com](mailto:yildizatadag@gmail.com)  
ORCID ID: <https://orcid.org/0000-0002-8516-6477>

## References

1. Tekpınar H, Aşık Z, Özen M. Evaluation of the patients who apply to family medicine policlinic. *Türk Aile Hek Derg* 2018; 22: 28-36.
2. Ministry Of Health Of The Republic Of Turkey. Cervical Cancer Screening Program National Standards. [Updated 2017; cited 2021 Jan 4]. Available from: <https://hsgm.saglik.gov.tr/tr/kanser-tarama-standartlari/listesi/serviks-kanseri-tarama-program%C4%B1-ulusal-standartlar%C4%B1.html>
3. Ministry of Health of The Republic of Turkey. Breast Cancer Screening Program National Standards. [Updated 2017; cited 2021 Jan 5]. Available from: <https://hsgm.saglik.gov.tr/tr/kanser-tarama-standartlari/listesi/meme-kanseri-tarama-program%C4%B1-ulusal-standartlar%C4%B1.html>
4. Colorectal Cancer Screening Program National Standards. Ministry Of Health Of The Republic Of Turkey. [Updated 2017; cited 2021 Jan 5]. Available from: <https://hsgm.saglik.gov.tr/tr/kanser-tarama-standartlari/listesi/kolorektal-kanser-tarama-program%C4%B1-ulusal-standartlar%C4%B1.html>
5. Samancı VM. Pandemic process in primary healthcare. *Konuralp Tıp Derg* 2020; 12: 391-393.
6. Ersoy E, Saatçi E. Cancer screening: Controversies. *Türk Aile Hek Derg* 2017; 21: 118-122.
7. Issa I, Noureddine M. Colorectal cancer screening: An updated review of the available options. *World J Gastroenterol* 2017; 23: 5086-5096.
8. Milosevic M, Jankovic D, Milenkovic A, Stojanov D. Early diagnosis and detection of breast cancer. *Technol Health Care* 2018; 26: 729-759.
9. Seely JM, Alhassan T. Screening for breast cancer in 2018-what should we be doing today? *Curr Oncol* 2018; 25: 115-124.
10. Sachan PL, Singh M, Patel ML, Sachan R. A study on cervical cancer screening using pap smear test and clinical correlation. *Asia Pac J Oncol Nurs* 2018; 5: 337-341.
11. White A, Thompson TD, White MC, Sabatino SA, de Moor J, Doria-Rose PV, et al. Cancer screening test use - United States. *MMWR* 2017; 66: 201-206.
12. Jansen EEL, Zielonke N, Gini A, Anttila A, Segnan N, Voko Z, et al. Effect of organised cervical cancer screening on cervical cancer mortality in Europe: a systematic review. *Eur J Cancer* 2020; 127: 207-223.
13. Etçioğlu E, Aydın A. Family medicine and Covid-19. In: Karabay O, Dheir H, Yaylacı S, editors. A to Z Covid-19. Ankara: Akademisyen Press; 2021. p. 419-426.