COVID-19 pandemic and impacts on cervical cancer screening and treatment programs: A narrative review

Abstract

Cervical cancer is a significant global health issue affecting both developing and industrialised countries. Annually, over 500,000 women are diagnosed with cervical cancer, resulting in more than 300,000 deaths worldwide. Notably, around 90% of cervical cancer cases occur in low- and middle-income countries that lack organised HPV screening and vaccination programs. The condition is commonly known as the 'disease of disparity' due to the significant difference in incidence and mortality rates between low- and middle-income countries and high-income countries. The objective of this review is to describe the impact of the COVID-19 pandemic on cervical cancer, based on a narrative literature review. Experts in global gynecological health have reported that cervical cancer screening programs, already scarce in low- and middle-income countries, have been severely impacted by COVID-19 and cuts in UK foreign aid. The pandemic has caused delays in diagnosis due to the interruption of health services by COVID-19 control measures, as well as affecting the follow-up and treatment of women who have already been diagnosed. Following the pandemic restrictions, incidence and mortality rates have increased due to the failure of pap smear screening. The lack of screening services has disproportionately affected women who are most vulnerable due to social factors. In the long term, this may have a greater impact on low- and middle-income countries.

Key words: Cervical cancer, Screening, Treatment, COVID-19.

INTRODUCTION

Cervical cancer is a type of cancer that affects the cervix. It has two main histological types: squamous cell carcinoma, which accounts for approximately 75% of cases and typically begins in the transformation zone of the ectocervix, and adenocarcinoma, which accounts for around 25% of cases and usually arises in the glandular columnar layer of the endocervix. The development of cervical neoplasia is closely linked to the human papillomavirus (HPV), which has been detected in 99.7% of cervical cancers. Chronic infection with high-risk HPV strains, mainly subtypes 16 and 18, is the main cause of this

condition. It is worth noting that the HPV subtypes linked to squamous cell carcinoma differ from those associated with adenocarcinoma (1).

Cervical cancer is a significant global health concern, with over 500,000 women diagnosed annually and more than 300,000 deaths reported worldwide. Unfortunately, the majority of cases occur in low- and middle-income countries that lack organized HPV screening and vaccination programs. In contrast, high-income countries have seen a significant reduction in cervical cancer incidence and mortality over the past 30 years, thanks to the implementation of formal screening programs (2).

Globally, the incidence of cervical cancer is rising in both developed and developing nations. 528,000 new cases and 266,000 fatalities from cervical cancer were reported in 2012. Because of the startling gap in incidence and mortality between low- and middle-income countries and high-income ones, it is frequently referred to as the "disease of disparity" (3).

Worldwide, women who die from cancer are most commonly affected by this type of malignancy. abnormalities in the squamous cells of the cervix are referred to as cervical intraepithelial neoplasia (CIN), with more extensive abnormalities (CIN grades II and III) being referred to as high grade squamous intraepithelial lesions (HGSIL). If the lesions are not treated, at least 25% of women with HGSIL will develop carcinoma in situ or invasive malignancy. Determining the risk factors for HGSIL is essential(4).

Only in the latter part of the 1970s, when cervical cancer was first acknowledged as a public health issue, did Brazil establish laws intended to manage the illness. The Comprehensive Women's Health Program was created by the Brazilian Ministry of Health (MoH) in the 1980s, as a result of health reform and the growing power of women's movements during the nation's return to democracy. The MoH realized in 1995 that a nationwide campaign to control cervical cancer was necessary. As a result, the Cervical Cancer Information System (SISCOLO) was implemented, the Viva Mulher Program was established, and phases one and two of the program's intensification occurred in 1996, 1998, 1999, and 2002, respectively. With the introduction of the Pact for Health and the National Oncology Care Policy in 2005–2006, state and local health plans encompassing all three branches of government included cervical cancer control(5).

In many nations, screening and treatment are provided through opportunistic screening, population-based (organized) or non-population-based (unorganized) programs, or both. In settings with limited resources, a screen-and-treat approach may be used, which

entails testing immediately followed by treatment without biopsy confirmation. Countries and circumstances differ greatly in terms of participation rates and coverage. Socioeconomic status, ethnic group, health insurance status, and educational attainment are the primary factors that determine participation. Some women may find it difficult to receive services because they lack authority, control, or influence, which in some situations poses significant obstacles to participation(6).

Stratified squamous epithelium and columnar epithelium, which cover the ectocervix and endocervix, respectively, line the endocervical canal in malignancy. The squamocolumnar junction refers to the transition region that exists between these cells. Any precancerous cell change primarily takes place in the squamocolumnar junction and is strongly linked to the high-risk HPV genotype. CIN refers to premalignant alterations or squamous cell dysplasia in the cervical epithelium. In the event that CIN is not treated promptly or if HPV is able to deactivate cell functions, it may develop to carcinoma in situ and invasive cancer. Furthermore, there is compelling evidence that specific HPV viral proteins promote dysplastic alterations in infected cells, which in turn cause precancerous lesions to progress into cancerous ones. The immune system can aid in the recovery of an individual with mild dysplasia or CIN 1 (low-grade CIN) from the infection. CINs are categorized histologically based on the degree of severity. CIN 1, or low-grade CIN, is a moderate dysplasia characterized by abnormality in the lowest third of the epithelium. CIN 2, also known as mild dysplasia, is the term used to describe an epithelium that is afflicted in two thirds. When the disease affects more than two-thirds of the epithelium's total thickness, the condition is known as severe dysplasia CIN. High-grade CIN is the aggregate term for lesions classed as CIN 2 and CIN 3(7).

The cornerstone of treatment for patients with locally advanced illness is still single-agent cisplatin-based chemotherapy administered along with radiation therapy. Treatment for patients with metastatic, progressive, and recurring disease often entails combining bevacizumab with chemotherapy. However, new research indicates that early immunotherapy can be beneficial for women whose cancer expresses programmed death ligand-1. Treatment for locally advanced cervical cancer tries to identify reversible or treatable causes of symptoms and palliate those with irreversible causes. The physical side effects of these treatments are primarily caused by radiation to the pelvic. Patients with cervical cancer must deal with the psychological effects of sexual dysfunction and the

stigma associated with having a cancer that could have been prevented by an STD. Physicians should encourage open communication to address unique survival difficulties(8).

In view of this problem, the aim is to describe the impact of the COVID-19 pandemic on cervical cancer, based on a narrative review of the literature.

METODOLOGY

Based on searches conducted in the Science Direct, PubMed, and Google Scholar databases, this narrative literature review was completed in March 2024. It includes full articles, guidelines, manuals, theses, and dissertations in any language. The research that demonstrated how COVID-19 affects cervical cancer were included.

One general research method utilized for preliminary studies is the narrative review. Finding a few studies that discuss an interesting issue is its goal. A topic of interest is all that is required for narrative reviews; there is no predefined research question or search approach. They lack organization and adherence to established procedures. The review is not guided by any standard or process(9).

RESULTS AND DISCUSSION

Global experts on gynecological health claim that COVID-19 and UK foreign aid cuts have damaged cervical cancer screening programs, which are already rare in low- and middle-income nations. The World Health Organization (WHO) reports that only 10% of women in some areas, frequently in marginalized and difficult-to-reach populations, have access to screening, despite the fact that screening is crucial for the prevention and early identification of the illness. Due to the pandemic, cervical cancer screening has been frustratingly deprioritized in areas where human papillomavirus (HPV) vaccination and screening have been made available through the persistent efforts of the development community over several years. As a result, health services are overburdened and patients are avoiding hospitals out of fear of contracting COVID-19 (10).

To evaluate the pooled percentage of women evaluated for cervical cancer before and during the COVID-19 epidemic, a systematic review and meta-analysis were conducted.

Seven studies from Slovenia, Italy, Ontario (Canada), Scotland, Belgium, and the USA were included in the meta-analysis. Those studies comprised 403,986 women and 199,165 women who were examined for cervical cancer, respectively, prior to the COVID-19 pandemic in 2019 and during the pandemic in 2020. In 2019, 9.79% of women were screened for cervical cancer overall (95% confidence interval [CI]: 6.00%–13.59%, 95% prediction ranging [0.42%–23.81%). The pooled percentage of women examined during the pandemic dropped to 4.24% (95% CI 2.77%-5.71%, 95% prediction interval 0.9%-17.49%).The rate of cervical cancer screening has significantly decreased as a result of travel restrictions and lockdowns implemented to combat the COVID-19 outbreak. To stop the burden of cervical cancer from having an ongoing effect, screening efforts must be intensified(11).

According to a Slovenian study, a two-month screening lockdown that took place between March 12 and May 8, 2020, led to an epidemic deficit in screening (92%), follow-up (70%) and HPV screening tests (68%), as well as in invasive cervical lesion diagnosis (-47%) and treatment (15%). The time it took to diagnose and treat patients did not rise, but the time it took to receive laboratory findings varied but stayed within acceptable bounds. Slovenia sought to minimize the pandemic deficit of annual CIN2+ cases (-10%) and screening smears (-23%) as it approached the second epidemic. The worst impacted women were those between the ages of 30 and 39, who had the largest annual incidence of CIN2+ (-19%) and pandemic deficiency of screening smears (-26%). Every aspect of our lives has been significantly impacted by the pandemic. There are now new vulnerable groups and disparities that need to be acknowledged and addressed. It is imperative that coordinated screening be maintained and monitored in locations where it may be conducted thoroughly and safely in order to prevent long-term increases in the burden of cervical cancer brought on by the COVID-19 pandemic (12).

The initial lockdown in April 2020 coincided with a sharp 75.5% decline in testing volume in Romania between the final 24 months of the pre-pandemic period and the first 24 months of the COVID-19 pandemic. Following this, the number of cases dropped to 36.1% in December 2021. During the first 24 months of the pandemic, there was a total loss of 49.9% in test volume. While the number of newly diagnosed tumors in our outpatient clinic decreased by 45% from the baseline, the percentage of advanced-stage cervical cancers (III-IV) increased by 17%. Negative effects included 9.2% more patients waiting four weeks or longer for test results, 6.4 months longer for patients to seek cancer care after diagnosis (compared to 4.1 months prior to the pandemic), and a significant increase in missed

appointments. In comparison to the same period before to the COVID-19 pandemic, the first 24 months of the pandemic had a markedly detrimental influence on the diagnosis and treatment of cervical cancer in patients. There is still a sizable disparity, even though the figures are starting to rise, which suggests that many cases of cervical cancer may have gone unreported. It is necessary to implement interventions to reduce the gap between the pre-pandemic and pandemic periods(13).

A survey conducted from September 1, 2019 to January 31, 2020, and from September 1, 2020 to January 31, 2021, at a cancer facility in Brazil. From September 20 to January 21, a total of 268 patients with breast cancer and 44 patients with cervical cancer made their first appointments at our cancer center; 457 and 60 patients, respectively, had their appointments from September 19 to January 20. Patients who saw their first doctor between September 20 and January 21, during the pandemic, had higher rates of advanced-stage breast cancer ($p < 0.001$) and cervical cancer ($p = 0.328$) compared to patients seen between September 19 and January 20, prior to the pandemic, though the difference in cervical cancer cases was not statistically significant. Between September 20 and January 21, the percentage of patients with cervical cancer who received a diagnosis of locally advanced illness (stages III–IVA) was 56.8% (N = 25), as opposed to 43.3% (N = 26) between September 19 and January 20. Comparably, from September 20 to January 21, 37.3% (N = 100) of patients with breast cancer had stage III disease, while from September 19 to January 20, 23.2% (N = 106) had the same condition. Compared to before the pandemic (25.5%), fewer patients with breast cancer (13.7%) received a diagnosis as a result of screening tests ($p < 0.001$). When patients with breast and cervical cancer visited an oncology center for the first time during the COVID-19 pandemic, their disease was more advanced than it was during a comparable time period prior to the pandemic. It is important to avoid compromising necessary oncology services because doing so will negatively affect cancer patients in the long run(14).

Women who are immunosuppressed, such as those who have received organ transplants, and who are protected by COVID-19, are more likely to develop cervical (pre)cancer. Economically disadvantaged women are also more likely to contract COVID-19 because of things like cramped living conditions, jobs that can't be done from home, or jobs that are frequently done in locations where it's hard to keep a physical distance. Compared to women from better socioeconomic groups, these women were already more likely to miss screenings, develop cervical lesions that needed to be treated, and be tested less frequently in

accordance with best practice protocols even before the pandemic. The challenges brought on by COVID-19, such as losing one's job and insurance, finding it harder to schedule in-person appointments for primary care, and temporarily shifting attention away from preventive measures unrelated to COVID-19 health, may cause screening to fall further down a person's list of priorities. It will be difficult to identify and involve these ladies in the rehabilitation phase, and more deliberate communication techniques than just gentle reminders probably won't cut it(15).

According to a comprehensive review, the pandemic had a significant influence on access to screening services and diagnostic methods for cervical screening and cancer. The number of women with cervical lesions who underwent therapy has changed, and treatment delays and suspensions have been documented in all but one of the studies that looked into cervical cancer treatment. Restrictions and COVID-19 have had a significant impact on the first wave of cervical cancer cases in 2020. Screening rates have decreased and treatment has been delayed, significantly disrupting cervical cancer prevention and care. When considered collectively, the systematic review's findings demand immediate legislative changes for cervical cancer treatment, recovery, and prevention(16).

According to an English study, over the same period in 2020, there were 91% fewer samples received in laboratories than anticipated in April, 85% fewer during May, and 43% fewer in June than there were in 2018. Compared to the same months in 2018, laboratories received 12.6% more samples on average between August 2020 and April 2021; however, by April 2021, there had been a little decrease of 200,949 samples (6.4% fewer than in 2018). With a maximum screening delay of 12 months, an excess of 41 cervical cancers (4.0 per 100,000 women) are anticipated to occur among the estimated 1,024,794 women taking part in this round of delayed screening. According to an English study, over the same period in 2020, there were 91% fewer samples received in laboratories than anticipated in April, 85% fewer during May, and 43% fewer in June than there were in 2018. Compared to the same months in 2018, laboratories received 12.6% more samples on average between August 2020 and April 2021; however, by April 2021, there had been a little decrease of 200,949 samples (6.4% fewer than in 2018). With a maximum screening delay of 12 months, an excess of 41 cervical cancers (4.0 per 100,000 women) are anticipated to occur among the estimated 1,024,794 women taking part in this round of delayed screening(17).

According to a review, radiotherapy was preferred for later stages of endometrial cancer during the COVID-19 pandemic, whereas hormone therapy was preferred for early-

stage cases. Any major surgery should be delayed for ten to twelve weeks. Cervical intraepithelial neoplasia 3 and high-grade squamous intraepithelial lesions should be treated immediately upon diagnosis with at least a loop electrosurgical excision operation. When cervical cancer is still in its early stages, radiation may be recommended in the interim while surgery is postponed for two to four weeks. A patient may benefit from hormone therapy for two to three months if they have an ovarian mass with no tumor markers, no ascites, no symptoms of cancer on imaging studies, a low serum CA-125 level, and no papillary projection or vegetation at the base of the cyst. When ovarian cancer is first discovered and confirmed, surgery should be done as soon as feasible (maximum: 2-3 weeks). Treatment for vaginal and vulvar malignancies can begin 10–12 weeks after diagnosis; however, in this case, radiation therapy is preferable(18).

Studies conducted in California have indicated a decline in cancer screening rates, encompassing cervical cancer screening rates, amongst the COVID-19 epidemic. About 1.5 million women in the Kaiser Permanente Southern California (KPSC) network had their cervical cancer screening rates drop by about 80% during the California stay-at-home order. Following the reopening, the decline was comparable for all racial/ethnic groups at KPSC and nearly returned to normal. Cervical cancer and pre-cancer risk may rise with prolonged disruptions. Reintroducing screening to the highest-risk populations initially, such as those with abnormal test results or a higher chance of developing pre-cancerous lesions and malignancies, is crucial during a pandemic(19).

Between 2016 and 2020, Puerto Rico's Medicaid subscribers' rates of cervical cancer screening declined (notification database). The biggest drops occurred in September 2017, the month of the hurricanes, and the events that struck Puerto Rico in the first quarter of 2020 (the earthquakes in January and the lockdown due to COVID-19 in March). The COVID-19 pandemic caused a sharp decline in screening rates, which never recovered to 2016 levels despite minor gains seen after January 2018. These findings are concerning because Porto Rico has shown a rise in the prevalence of cervical cancer in recent years (from 9.2 to 13.0 per 100,000 between 2001 and 2017). Increasing infrastructure and resilience systems, together with incorporating goals and objectives to support the maintenance of cancer prevention and treatment services during and after disasters, should be the main emphasis of public health initiatives(20).

The immediate effects of the COVID-19 pandemic on cervical screening, colposcopy, and treatment volumes in Ontario, Canada, are detailed in a report. In

comparison to the corresponding months in 2019, the average monthly number of cervical screening cytology exams, colposcopies, and treatments declined by 63.8% (range: -92.3 to -41.0%), 39.7% (range: -75.1 to -14.3), and 31.1% (range: -43.5 to -23.6%) during the first half of the COVID-19 pandemic. A monthly average of 292 (-51.0%) fewer high-grade cytological abnormalities were found through screening between March and August 2020. 1,159 people (29.2%) with high-grade screening cytology were waiting for a follow-up colposcopy as of August 2020. In Ontario, the COVID-19 epidemic has significantly impacted important cervical screening and follow-up services. In order to guide system response and recovery, continuous service utilization monitoring is required as the pandemic progresses. It will take further work to determine how COVID-19-related alterations affect the prognosis of cervical cancer(21).

A three-year study conducted in England evaluated the influence on workload and estimated the effect of the COVID-19 pandemic on the diagnosis of cervical cancer. During the study periods, 406 patients were registered, with 233 in 2019 and 173 in 2020. This represents a 25.7% decrease (n = 60) in the total number of diagnoses. This was accounted for by a decrease in low-stage cases (104 in 2019 against 77 in 2020).By combining this data with the extra cases linked to the brief stop of screening during the pandemic, forecasts were created indicating that there would be an additional 586, 228, and 105 cases of local, regional, and distant disease, respectively, in England over the course of the following three years. According to the projection tools, this excess may be eliminated in 12 months or 7 months, respectively, by boosting surgical capacity by two or three cases per month per center. Over the next three years, there will probably be a noticeable rise in the number of instances of cervical cancer. This could be mitigated with minimal increase in morbidity or mortality by increasing surgical capacity(22).

According to a study conducted in Italy, fewer screening tests were performed between January and September 2020 than during the same period in 2019. The reason for this was the cancellation of planned tests as well as lower screening adherence, most likely brought on by anxiety over COVID-19 (cervical, breast, and colorectal cancer rates were 17%, 21%, and 20%, respectively). While the lower test frequency (between 54% and 58%) during the pandemic's first wave (January to May) can be explained, there was still a notable decline in screening adherence (between 28% and 46%) during the second evaluation period prior to the second wave (June to September). This resulted in 6,600 precancerous colorectal lesions, over 6,300 missed diagnoses of colorectal, breast, and cervical cancer, and an

estimated cumulative delay of four months or more. Similar data, with more delays and missed diagnosis, could be anticipated during the pandemic's second wave(23).

An examination of Trilliant Health's all-payer encounter and notification database conducted nationwide, encompassing notifications for prescription drugs, inpatient care, and outpatient care from all 50 states as well as the District of Columbia. From January 2017 to December 2021, they examined medical notifications issued on a quarterly basis for the calendar year. The pre-pandemic screening rate for cervical cancer was 5,602 (5,462-5,851) per 100,000 beneficiaries, which was the median quarterly rate (IQR). In the second quarter of 2020, the rate of cervical cancer screening dropped to 3,563, representing a 36% decrease. Cervical cancer screening increased to the pre-pandemic median in the third quarter of 2020 but gradually decreased from 4,853 in the fourth quarter of 2020 to 4,246 in the fourth quarter of 2021. (24).

Pooled incidence rates for screening for breast cancer (0.63; 95% CI, 0.53 to 0.77; P < 0.001), colon cancer (0.11; 95% CI, 0.05 to 0.05 0.24; P < 0.001), and cervical cancer (0.10; 95% CI, 0.04 to 0.24; P < 0.001) were significantly lower during the COVID-19 pandemic, according to a meta-analysis. These results may contribute even more morbidity and mortality to the current public health emergency(25).

According to an international federation of gynecology and obstetrics study conducted in Romania, new cases of cervical cancer presented at more advanced stages (34.6% of stage III cases during the pandemic vs. 22.4% prior to the pandemic, p-value = 0.047). The study also examined the effects of COVID-19 on early-stage surgical treatment for cervical cancer. These patients experienced a notably higher number of treatment plan modifications, surgical and radiochemotherapy treatment postponements. Out of the entire group of patients with cervical cancer, 160 finished a three-year follow-up period and were at an early stage eligible for curative treatments. The choice of surgical procedure or SARS-CoV-2 infection had no effect on disease-free survival or overall survival (log-rank p-value = 0.449 and 0.608, respectively). The specific risk variables for the three-year mortality risk were shown to be unrelated to SARS-CoV-2 infection and therapeutic modifications made during the COVID-19 pandemic. The first 24 months of the COVID-19 pandemic saw a decrease in the number of cervical cancer cases detected annually; this decline was attributed to modifications in health system regulations that did not guarantee the same conditions as prior to the pandemic. The excess of cases diagnosed at later stages is expected to have lower survival rates, imposing on health systems to consider different strategies for

these patients while the pandemic is still ongoing, despite significant changes in the disease-free survival of early-stage cervical cancers(26).

11,488 surgical procedures were performed to treat gynecological cancer, according to a survey conducted in the Netherlands. The surgical volume for cervical cancer was 17.2% lower in 2020 than it was in 2018–2019 (average: n = 542.5 in 2018–2019, n = 449 in 2020). Merely 51% of the anticipated procedures for cervical cancer were carried out in the mid-term period, or the nadir. Volumes stayed constant for endometrial, ovarian, and vulvar cancer. Neoadjuvant chemotherapy was administered to patients with advanced-stage ovarian cancer more frequently in 2020–19 than in 2018–2019 (67.7% (n = 432) vs. 61.8% (n = 783), p = 0.011). All four cancers had a noticeably lower average time to first therapy in 2020. In 2020, hospital stays for endometrial and vulvar cancer were noticeably shorter. Regarding the 30-day mortality and the complex course, no discernible variations were found. 2020 saw a decline in the surgical volume for cervical cancer, a considerable reduction in waiting times for all malignancies, and an increase in the use of neoadjuvant chemotherapy for advanced ovarian cancer as a result of the COVID-19 pandemic's influence on gynecological-oncological surgical treatment. The pandemic had no detrimental effects on the safety of perioperative care since complications and 30-day mortality stayed consistent (27).

A US study evaluated the secondary effects on cervical cancer burden, divided by main test modality and screening process stage, of the COVID-19 pandemic's disruptions to cervical cancer screening. The models consistently shown that, by 2027, COVID-19-related effects result in minor net increases in cases of cervical cancer, which are larger for women who had previously had cytology screening than for those who had co-tested. Upon affecting all four phases of the cytology-based screening procedure, the number of new patients examined for 6- and 24-month interruptions was 5-7 and 38-45, respectively, per million. In comparison, there were an additional 4-5 and 35-45 cases per million under co-testing, respectively, that were screened for 6- and 24-month interruptions. Rather than primary screening, the bulk (58–79%) of the projected increases in cases under co-testing were caused by delays in monitoring, colposcopies, or excisional therapy. Priority groups for reintroductions may include women who need surveillance, colposcopies, excisional therapy, or whose most recent primary screening did not include a human papillomavirus test(28).

The effect of the COVID-19 epidemic on cervical cancer screening in gynecological practices has been demonstrated by a German study. Germany saw a considerable decline in cervical cancer cases related to gynecological procedures between the pre-pandemic years of 2018–2019 and the pandemic years of 2020–2021. All age groups saw this decline, although women between the ages of 20 and 34 saw the most drop (-25.6%), while women over 50 saw the least (-15.2%). They found a statistically and clinically substantial decrease in the number of cervical cancer diagnoses in German gynecological practices. Given that the new screening methodology, which started in 2020 and sends direct invitations to every patient, was expected to result in a higher number of patients in the initial years, this discovery is all the more remarkable. Nonetheless, there may be a rise in the incidence of cervical cancer as a result of the noted drop in the identification of precancerous lesions in the cervical cavity. To revert to pre-pandemic cervical cancer rates and adjust to the ongoing COVID-19 pandemic, risk-based screening programs and extra steps are required(29).

The discrepancies between the screening rates and diagnostic markers for colorectal and cervical cancer before and during the first year of the COVID-19 pandemic were examined in Washington, USA. The number of patients who had colonoscopies prior to COVID-19 was 26,081 (12.7%), while the number during the pandemic was just 15,708 (7.4%), indicating a 39.8% drop. For cervical and colorectal cancer, 238 patients were referred to medical oncology; this is a 34% decrease from the 155 cases seen in the first year of the pandemic. 22,395 (10.7%) women received pap smear tests prior to the COVID-19 pandemic, compared to 20,455 (9.6%) women during the epidemic, a decrease of 7.4%. The number of women sent for colposcopy prior to COVID-19 was 1,780, a 4.3% decrease from the 1,680 patients during the pandemic. Due to the pandemic, screening will probably be interrupted, and the ensuing delay in detection will probably result in later-stage diagnoses of cervical and colorectal cancer, which is known to reduce survival. The findings highlight the importance of giving cancer screening a priority, particularly for those who are most at risk(30).

The forms of screening examined were linked to a significant overall decline (-46.7%, -44.9%, and -51.8% for breast, colorectal, and cervical cancer screening, respectively) from January to October 2020, according to a meta-analysis of 39 papers. This decline was characterized by a U-shaped pattern, with negative peaks for mammography (-74.3%), colonoscopy (-69.3%), fecal occult blood test (-69.3%), and fecal immunochemical test (-78.8%) in April 2020 and March 2020, respectively. This indicates that a significant

decrease in cancer screening services was linked to the COVID-19 pandemic measures, which may have contributed to a delay in cancer detection and an increase in cancer mortality(31).

The effect of COVID-19 on cervical cancer screening was demonstrated by a Japanese study. Less than 50% of the previous year's total number of cancer screenings was conducted from March to August, with May having the lowest number of screenings. Specifically, there was a noteworthy and much lower decline in the frequency of cancer screenings in "prefectures operating under special safety precautions" compared to other prefectures. Nevertheless, even though the second wave of the pandemic struck at the national level, the number returned to normal starting in August. The initial "State of Emergency" resulted in a far lower number of people undergoing population screening; however, there has been a notable recovery, and the overall number is anticipated to remain unchanged from prior years. The first "State of Emergency" resulted in a sharp decline in the quantity of individuals undergoing population screening(32).

CONCLUSION

The review examined the effects of COVID-19 on cervical cancer across multiple nations. It found that the pandemic delayed diagnosis because COVID-19 control measures disrupted health services, and it also had an impact on women who had already received a diagnosis in terms of follow-up and treatment. As a result of pap smear screening's failure, incidence and death rose during the pandemic limitations.

Due to societal considerations, the most disadvantaged women have suffered the most from the lack of screening facilities, and low- and middle-income countries may be more affected in the long run by the incidence and mortality. Thus, in the post-pandemic phase, public measures that reintegrate these women into cancer screening and control programs are crucial for advancing women's health.

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