

Original Research Article

The impact of the COVID-19 pandemic on physicians managing breast cancer patients in Saudi Arabia

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ABSTRACT

Background: The COVID-19 pandemic has significantly impacted the health-care system worldwide, and physicians face challenges in clinical practice, especially in managing cancer patients. This study aimed to assess the impact of COVID-19 on physicians managing breast cancer patients in Saudi Arabia.

Methods: A cross-sectional study was conducted from May to October 2020 among physicians practicing in Saudi Arabia, using an online-based survey. The questionnaire included items on physicians' sociodemographic, barriers faced with breast cancer patients, concerns about and satisfaction with breast cancer patients' management, and treatment protocols they follow.

Results: A total of 317 physicians participated in this study. Most of them faced difficulties in their work with breast cancer patients during this pandemic, and 77.3% reported that they diagnosed at least one breast cancer case. Many patients missed chemotherapy sessions, and half of the centres indicated that more than 10% of their patients missed at least one session. 83% of the physicians were satisfied with the way they managed breast cancer patients, and 73% follow a specific protocol in managing breast cancer patients.

Conclusions: The study's findings show that the active COVID-19 pandemic led to a more stressful situation among physicians, which has affected management of breast cancer patients. COVID-19 is reshaping the delivery of not only breast cancer care but also general oncology practice. Currently, due to the availability of effective vaccination and more understanding of COVID-19, we believe that breast cancer operations should be performed on their scheduled date.

Keywords: Breast, Cancer, COVID-19, Surgery, Saudi

INTRODUCTION

Several cases of pneumonia of unknown origin were documented in China in late December 2019 and confirmed to have been caused by a novel coronavirus in early January 2020. In March 2020, the world health organization (WHO) pronounced COVID-19 a pandemic.

Coronavirus SARS-CoV-2 is a new type of coronavirus that can affect people and is defined as the causal agent of Coronavirus disease 2019 (COVID-19).¹

The global outbreak of COVID-19 has placed a huge burden on health-care systems and patients worldwide.² The pandemic challenges physicians and health-care

workers to modify their patient care practice, particularly in working with cancer patients.² These modifications include reducing exposure risk, preserving resources, and adjusting the management of cancer patients.²

Breast cancer has exceeded lung cancer as the most commonly diagnosed cancer in women, with an estimated 2.3 million new cases in 2020 (11.7 per cent).³ The challenges that our health-care system faces are maintaining essential breast cancer treatment while reducing the risk of exposure to COVID-19.⁴ These patients are more likely to be infected due to their immunosuppressed status compared to other patients and the general population.⁴ A COVID-19 infection may cause many complications that could delay treatment and cause unnecessary hospitalization.⁵

For the time being, breast cancer patients should be managed using a multidisciplinary approach to provide high-level care in the shortest possible time frame while complying with defined quality indicators.⁶ One study indicated that the pandemic response has resulted in a sudden disruption of treatment of cancer patients, a vulnerable population that requires prompt, high-quality multidisciplinary interventions.⁷ Another study recommended the suspension of routine breast cancer screening and the treatment of patients with early and advanced breast cancer at outpatient clinics at the closest medical center whenever possible.⁸

While the American college of surgeons released a statement recommending the cancelation of elective surgeries, some studies indicated that when surgery is indicated, the most minimal effective surgical procedure with the fastest recovery time should be performed. This reduces the risk to the patient as well as the need for health-care resources.^{9,10} These general recommendations should be applied even in countries where the outbreak has not yet had an impact on the health system and surgical activity continues with a reduction of less than half the usual production.¹¹ Fortunately, due to neoadjuvant treatment choices, many breast cancer patients do not need upfront surgical resection.¹²

There is a need to avoid the use of active breathing aids for radiotherapy due to the possibility of contamination with aerosols and to limit the amount of breast cancer radiotherapy equipment requiring decontamination.¹³ The active breathing coordinator features a mouthpiece and filter intended for use with a single patient.¹⁴ However, the deferral of breast cancer cases would potentially increase the workload of the medical oncologist and lead to a backlog of procedures when pandemic ends.² For these purposes, multidisciplinary discussion documenting the priority categories for surgery and/or adjuvant therapy is needed to ensure patients get the best results.²

During the pandemic, triage decisions require even more coordination and communication among specialists than usual.¹⁵ The postponement of surgery and the

administration of neoadjuvant therapy as a bridge can reduce patient risk and preserve health-care resources. Similarly, the radiation therapist can omit, delay, or use shorter courses to reduce visitor numbers.² The strategy of Al-Rashdan et al “is based on the appropriate use of hypofractionation and accelerated partial breast irradiation (APBI)”.¹⁶ The application of hypofractionation for patients, including those demanding locoregional irradiation, and choosing APBI for suitable patients based on international guidelines can serve to reduce the number of fractions of radiotherapy and thus minimize patient exposure during treatment, counteracting increased pressure on the health-care system.¹⁶ Hypofractionation and APBI may be the best treatments to provide a patient and worker safety balance while preserving patient access to high-quality cancer care, even during a pandemic.¹⁶ Pragmatism and safety should be maintained among practical considerations to ensure that patients undergoing therapy are effectively treated.¹⁷

Very few studies have been conducted to assess the impact of COVID-19 on doctors who work with breast cancer patients. To our knowledge, no similar study has been done in Saudi Arabia to address this issue. Thus, this study aimed to assess the impact of COVID-19 on doctors and the way they manage breast cancer patients in Saudi Arabia.

METHODS

A cross-sectional study was conducted from May to October 2020 in at least three hospitals in each region (central, eastern, western, southern, and northern) of Saudi Arabia. Data were collected using an online-based (electronic) survey that was distributed to doctors in different centres in KSA. A predesigned questionnaire was used.^{2,18} The questionnaire included items on participants' character, work experience, place of work, and specialty; whether they faced difficulties in their work with breast cancer patients and, if so, the types of difficulty; triaging patients; having new cancer cases during the COVID-19 pandemic; managing those patients' needs in terms of imaging, follow-up/surveillance, infusions or monthly injections, having metastasis or having undergone mastectomy; their satisfaction with breast cancer patient's management; and the protocols they follow. A sample size of 317 doctors was contacted. The inclusion criteria were surgeons and oncologists dealing with breast cancer patients in Saudi Arabia, and the exclusion criteria were non-surgeons, non-oncologists, and doctors not practicing in Saudi Arabia. Data were analyzed using SPSS version 24. Quantitative data were expressed as numbers and percentages, and a chi-squared test (χ^2) was applied to test the relationship between variables. A $p < 0.05$ was considered statistically significant. The ethical approval was obtained from Taif university, research ethics committee, application No.: 42-0001

RESULTS

A total of 317 doctors participated in this study. We found that 83.8% of the participants had an age ranging from 25-50 years, 53.1% were males, 35.7% had work experience of <5 years, 43.2% were residents, and 53.9% were from the central region of KSA. Most of the participants (92.5%) were working in government hospitals, and 78.8% were surgeons (Table 1).

The present study revealed that 74.7% of participants faced difficulties in managing patients with breast cancer during the pandemic (Figure 1). Our data showed that 44.8% indicated that surgical procedures caused the most difficulty, and 78.8% reported having triaged breast cancer patients during the COVID-19 pandemic-32.4% reported basing triage on multidisciplinary decisions (surgeon, radiologist, pathologist, and medical oncologist) (Table 2).

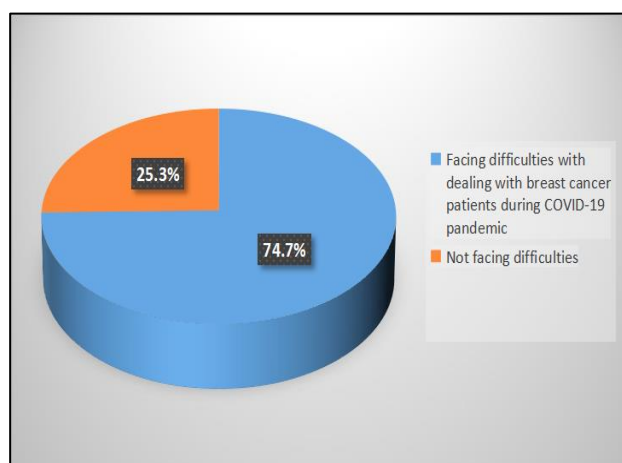


Figure 1: Percentage distribution of the participants according to face difficulties with dealing with a patient who has breast cancer during the COVID-19 pandemic.

This study found that 77.2% of the participants diagnosed at least one new case of breast cancer during the COVID-19 pandemic, 46.1% faced a confirmed case of COVID-19 with breast cancer, and 52.8% had never faced a patient with breast cancer and COVID-19 at the same time. Most reported that consultations with new breast cancer patients are typically conducted in person with

protection, and 39.4% reported that if they need to take a biopsy, they perform excision when conditions allow if there is no distant disease. More than half (57.7%) reported that if they have a patient with complete neo-adjuvant chemotherapy and have no other alternative medical therapies, they operate as soon as possible, depending on institutional resources (Table 3).

This study found that 78.4% of the participants reported that if they have a patient who needs breast imaging and is stable, they proceed as usual, and 53.9% reported that if a patient needs an urgent diagnostic image as well as seed placement (wire), they proceed as usual. In addition, 39.4% reported that if they have a patient needing follow-up/surveillance, they do it through postponement of the appointment to a later date. Most (81.3%) reported that if they have patients who need infusions or monthly injections, they proceed as usual, and 58.1% reported that if they have a patient with metastatic breast cancer, they also proceed as usual (Table 4).

Our results illustrated that 83% of participants were satisfied with the pandemic working arrangements for breast cancer patients, and 73% and 20.79%, respectively, always and sometimes followed a specific protocol in managing breast cancer patients. Most of those who always or sometimes followed protocols were following the management protocol of the American society of breast surgeons (Table 5).

It was observed that the over 50 years of age group had a significantly higher percentage of participants who reported facing difficulties in managing a patient with breast cancer during the COVID-19 pandemic ($p \leq 0.05$). On the other hand, a non-significant relationship was found between participant age and diagnosis of new cancer cases, facing a confirmed case of COVID-19 with breast cancer, satisfaction with working with the breast cancer patients, and using a specific protocol ($p \geq 0.05$) (Table 6).

This work revealed a non-significant relationship between participants' gender and years of experience and diagnosis of new cancer cases, facing a confirmed case of COVID-19 with breast cancer, facing difficulties managing breast cancer cases during the pandemic, satisfaction with working with breast cancer patients, and using a specific protocol ($p \geq 0.05$) (Tables 7 and 8).

Table 1: Distribution of the study participants according to their characters, working experience, place of work, and specialty, (n=241).

Variables	N (%)
Age (Years)	
<25	21 (8.7)
25-50	202 (83.8)
>50	18 (7.5)
Gender	
Female	113 (46.9)
Male	128 (53.1)

Continued.

Variables	N (%)
Working experience/ years	
<5	86 (35.7)
5-10	83 (34.4)
>10	72 (29.9)
Job title	
Consultant	70 (29)
Resident	104 (43.2)
Specialist/ registrar/senior registrar	67 (27.8)
Region	
Central	130 (53.9)
Eastern	37 (15.4)
Northern	6 (2.5)
Southern	10 (4.1)
Western	58 (24.1)
Hospital	
Governmental	223 (92.5)
Private	16 (6.6)
Both (Governmental and private)	2 (0.8)
Spatiality	
Oncologist	51 (21.2)
Surgeon	190 (78.8)

Table 2: Distribution of the participants according to facing difficulties with breast cancer patients, type of difficulty, triaging patients.

Variables	N (%)
In your opinion, which of them is most difficult?	
Diagnosis	28 (11.6)
Investigations (imaging, biopsy)	51 (21.2)
Surgical procedure (operation)	108 (44.8)
Follow up	36 (14.9)
Continues the management plan	18 (7.5)
Do you triage breast cancer patients during the COVID-19 pandemic?	
Yes	190 (78.8)
No	51 (21.2)
If your answer to the previous question was yes, you triage breast cancer patients according to what? (Applied more than one)	
Multidisciplinary decision (surgery, radiology, pathology, medical oncology)	78 (32.4)
Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Patient complains	5 (2.1)
Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Patient's comorbidities/risks	13 (5.4)
Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Patient's comorbidities/risks, -Patient complains	4 (1.7)
Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Patient's comorbidities/risks, -Stage of cancer	30 (12.4)
Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Patient's comorbidities/risks, -Stage of cancer, -Patient complains	14 (5.8)
Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Stage of cancer	20 (8.3)
-Multidisciplinary decision (surgery, radiology, pathology, medical oncology), -Stage of cancer, -Patient complains	4 (1.7)
Patient complains	9 (4.7)
Patient's comorbidities/risks	13 (5.4)
Patient's comorbidities/risks, -Patient complains	3 (1.2)
Patient's comorbidities/risks, -Stage of cancer	18 (7.5)
Patient's comorbidities/risks, -Stage of cancer, -Patient complains	1 (0.4)
Stage of cancer	28 (11.6)
Stage of cancer, -Patient complains	1 (0.4)

Table 3: Distribution of the participants according to new cancer cases during the COVID-19 pandemic and dealing with those patients.

Variables	N (%)
Do you diagnose a new case of breast cancer in the COVID-19 pandemic?	
Yes	168 (77.2)
No	55 (22.8)
Do you face a confirmed case of COVID-19 with breast cancer?	
Yes	111 (46.1)
No	108 (44.8)
How often did you face a patient with breast cancer and COVID-19 at the same time	
Never	168 (52.8)
Once only	48 (19.9)
Twice	42 (17.4)
Three times	15 (6.2)
More than three times	25 (10.4)
If you have a consultation for a new patient with breast cancer will be seen?	
An in-person visit with protection	191(79.3)
Delayed the consultation	9 (3.7)
Virtual visit (via telemedicine)	40 (16.6)
After triage	1 (0.4)
If you need to take a biopsy, what will you do?	
Admit patient with protection	1(0.4)
Delay excision until after COVID-19	13 (5.4)
Perform excision when conditions allow if there is no distant disease	95 (39.4)
Keep reporting timeline for biopsies as usual	78(32.4)
Schedule on the same day of the visit	50 (20.7)
ASAP, usually within 1 week	1 (0.4)
Guided biopsy by the radiologist	1 (0.4)
Image-guided biopsy	1 (0.4)
Try to arrange with radiology at the earliest	1 (0.4)
If you have a patient with complete neo-adjuvant chemotherapy and have no other alternative medical therapies, what do you do?	
Operate as soon as possible depending on institutional resources	139 (57.7)
Delay operation up to 8 weeks	19 (7.9)
Procedure immediately	72 (29.9)
Decision of the surgeon	2(0.8)
Do metastatic work up then surgery within 4-6 weeks	1 (0.4)
Follow the oncological guidelines based on breast cancer	2 (0.8)
I am referring to the surgeon to decide when to operate	1 (0.4)
I wait 4 weeks after last chemo, and if resources are available go to surgery, but if OR will be delayed because of lack of OR, if HER2 + start Herceptin if ER/PR +ve start hormonal until I get OR time	1 (0.4)
I'm not the surgeon	1 (0.4)
Referral	1 (0.4)
Repeat staging	1 (0.4)
Usual OR date post-chemo within 4-6 weeks	1 (0.4)

Table 4: Distribution of the participants according to dealing with cases needing imaging, follow up/surveillance, infusions or monthly injection, having metastasis, or undergoing mastectomy.

Variables	N (%)
If you have a patient who needs breast imaging but she stable, what will you do?	
Defer radiation until the pandemic is over	45 (18.7)
Not do it at all	4 (1.7)
Proceed as usual	189 (78.4)
Depend on the cancer suspension	1 (0.4)
Depends on the indication of imaging	1 (0.4)
I assume the question regarding the patient needs radiation (not radiology) > yes, we proceed as usual	1 (0.4)

Continued.

Variables	N (%)
If you need an urgent diagnostic image as well as seed placement (wire), what will you do?	
Defer until pandemic is over	5 (2.1)
Proceed as usual	130 (53.9)
Schedule on the same day of surgery to minimize hospital visits for patients	106 (44)
If you have a patient needing follow up/surveillance you, do it through:	
Postponement of appointment to a later date	95 (39.4)
In-person visit	62 (25.7)
Telemedicine	84 (34.9)
If you have patients who need infusions or monthly injections, what will you do?	
Defer until pandemic is over	39 (16.2)
Proceed as usual	196 (81.3)
Give it to the program director	1 (0.4)
I don't know	2 (0.8)
I don't have	1 (0.4)
Referral	1 (0.4)
Up to oncologist	1 (0.4)
If you have a patient who has metastatic breast cancer, what will you do?	
Refer to surgery immediately	91 (37.8)
Defer until the pandemic	7 (2.9)
Proceed as usual	140 (58.1)
Refer her to oncology at the earliest possible	1 (0.4)
Referral	1 (0.4)
Up to oncologist	1 (0.4)
If you have a patient had a mastectomy when you will do reconstruction?	
After 12 months	23 (9.5)
Between 6-12 months	141 (58.5)
Defer until pandemic is over	72 (29.9)
After she finishes her chemo radio	1 (0.4)
At the same OR	1 (0.4)
Delayed reconstruction	1 (0.4)
I don't do such a procedure	1 (0.4)
I'm not a surgeon	1 (0.4)

Table 5: Distribution of the participants according to their satisfaction with Breast Cancer patients and the protocol they follow.

Variables	N (%)
Are you satisfied with the management of breast cancer patients?	
Yes	200 (83)
No	41 (17)
Are you following a specific protocol in managing breast cancer patients?	
Yes	176 (73)
No	15 (6.2)
Sometimes	50 (20.7)
If yes or sometimes, which management protocol are you following?	
American society of breast surgeons	117 (48.5)
Hospital (local)	97 (40.2)
ACR	1(0.4)
Both (American society of breast surgeons and hospital (local)	2 (0.8)
International guidelines	2 (0.8)
NCCN guidelines	3 (1.2)
NCCN, ESMO	2 (0.8)
NCCN/ ASBrS	1 (0.4)
Saudi guidelines	1 (0.4)

Table 6: Relationship between participants' age and diagnosis of new cancer cases, facing a confirmed case of COVID-19 with breast cancer, facing difficulties with dealing with breast cancer cases during the pandemic, satisfaction with working with the breast cancer patients and using a specific protocol.

Variables	Age in years			χ^2	P value
	<25 years, n (%)	25-50, n (%)	>50, n (%)		
Do you diagnose a new case of breast cancer in the COVID-19 pandemic?					
Yes	19 (10.2)	13 (7)	154 (82.8)	2.46	0.292
No	2 (3.6)	5 (9.1)	48 (87.3)		
Do you face a confirmed case of COVID-19 with breast cancer?					
Yes	11 (8.3)	8 (6)	114 (85.7)	1.03	0.596
No	10 (9.3)	10 (9.3)	88 (81.5)		
Do you face difficulties with dealing with a patient who has breast cancer during the COVID-19 pandemic?					
Yes	20 (11.1)	16 (8.9)	144 (80)	7.84	0.02
No	1 (1.6)	2 (3.3)	58 (95.1)		
Are you satisfied with working with a breast cancer patient?					
Yes	21 (10.5)	16 (8)	163 (81.5)	5.5	0.064
No	0 (0.0)	2 (4.9)	39 (95.1)		
Are you following a specific protocol in managing breast cancer patients?					
Yes	14 (8)	18 (10.2)	144 (81.8)	7.55	0.109
No	2 (13.3)	0 (0.0)	13 (86.7)		
Sometimes	5 (10)	0 (0.0)	45 (90)		

Table 7: Relationship between participants' gender and diagnosis of new cancer cases, facing a confirmed case of COVID-19 with breast cancer, facing difficulties with dealing with breast cancer cases during the pandemic, satisfaction with working with the breast cancer patients and using a specific protocol.

Variables	Gender		χ^2	P value
	Female, n (%)	Male, n (%)		
Do you diagnose a new case of breast cancer in the COVID-19 pandemic?				
Yes	93 (50)	93 (50)	3.17	0.075
No	20 (36.4)	35 (63.6)		
Do you face a confirmed case of COVID-19 with breast cancer?				
Yes	65 (48.9)	68 (51.1)	0.46	0.493
No	48 (44.4)	60 (55.6)		
Do you face difficulties with dealing with a patient who has breast cancer during the COVID-19 pandemic?				
Yes	90 (50)	90 (50)	2.76	0.096
No	23 (37.7)	28 (62.3)		
Are you satisfied with working with the breast cancer patient?				
Yes	68 (49)	102 (51)	2.1	0.147
No	15 (36.6)	26 (63.4)		
Are you following a specific protocol in managing breast cancer patients?				
Yes	80 (45.5)	96 (54.5)	1.44	0.485
No	6 (40)	9 (60)		
Sometimes	27 (54)	23 (46)		

Table 8: Relationship between participants' working experience and diagnosis of new cancer cases, facing a confirmed case of COVID-19 with breast cancer, facing difficulties with dealing with breast cancer cases during the pandemic, satisfaction with working with the breast cancer patients and using a specific protocol.

Variables	Working experience/ years			χ^2	P value
	<5, n (%)	5-10, n (%)	>10, n (%)		
Do you diagnose a new case of breast cancer in the COVID-19 pandemic?					
Yes	65 (34.9)	60 (32.3)	61 (32.8)	2.31	0.315
No	21 (38.2)	12 (21.8)	22 (40)		
Do you face a confirmed case of COVID-19 with breast cancer?					
Yes	52 (39.1)	32 (24.1)	49 (36.8)	4.82	0.09
No	34 (31.5)	40 (37)	34 (31.5)		

Continued.

Variables	Working experience/ years			χ^2	P value
	<5, n (%)	5-10, n (%)	>10, n (%)		
Do you face difficulties with dealing with a patient who has breast cancer during the COVID-19 pandemic?					
Yes	64 (35.6)	55 (30.6)	61 (33.9)	0.17	0.916
No	22 (36.1)	17 (27.9)	22 (36.1)		
Are you satisfied with working with the breast cancer patient?					
Yes	72 (36)	58 (29)	70 (35)	0.44	0.802
No	14 (34.1)	14 (34.1)	13 (31.7)		
Are you following a specific protocol in managing breast cancer patients?					
Yes	55 (31.3)	60 (34.1)	61 (34.7)	8.77	0.067
No	9 (60)	2 (13.3)	4 (26.7)		
Sometimes	22 (44)	10 (20)	18 (36)		

DISCUSSION

The on-going COVID-19 pandemic has put an enormous burden on the health-care sector, adding challenges to the smooth delivery of care in most countries. This has created disorderliness in non-COVID-19-related health-care delivery, especially in the care of oncologic patients.^{19,20} Reports from different countries show that for breast cancer (BC) patients, surgeries were postponed; recall appointments were cancelled, postponed, or switched to video conferencing; para-medical care such as medical rehabilitation and psychological support was considerably reduced; and national breast cancer screening programs were paused.²¹⁻²⁴ The findings of our study showed that approximately one-third of the physicians faced difficulty in managing patient care due to the COVID-19 pandemic. This may lead to delays or changes in diagnosis, treatment, and follow-up of breast cancer patients, which may possibly bring about concerns about survival or recurrence. COVID-19 poses a risk to both breast cancer patients and physicians, thus requiring deliberation about the risk-to-reward ratio in treatment initiation and follow-up.²⁵

In this study, scheduling and attending surgeries for breast cancer patients was the most common difficulty faced by the physicians. The reallocation of doctors and auxiliaries has reduced the availability of oncology specialists and of physical resources such as hospital beds and operating rooms.^{26,27} It is clear from recent studies that physicians are under huge stress and pressure due to the pandemic, and the widespread impact on health personnel numbers has increased due to isolation requirements and redeployment.^{28,29} In Saudi Arabia, as part of the immediate response to the pandemic, the ministry of health has given direction to all hospitals to restructure surgical services and to enable redistribution of resources.³⁰ This may have negatively impacted surgical care, and surgeons may have faced many difficulties in performing surgery on breast cancer patients. The study findings show that approximately 79% of the physicians agreed that they triage breast cancer patients, and most of them do it based on a multidisciplinary decision. Dietz et al proposed a "Priority" classification for breast cancer patients based on the severity of the condition and the potential efficacy

of treatments that include priority categories A, B, and C.³¹ The priority A category would include patients with life-threatening, clinically critical disease for whom delayed treatment would remarkably change the prognosis. This category of patients has been given top priority even as the resources become scarce, and the prime concern should be the preservation of life, control of the disease progression, or symptomatic relief. The priority B category includes BC patients who are not in an immediately life-threatening condition, and treatment may be delayed for a defined period of time during the pandemic. Patients under priority C are those whose treatment can be postponed indefinitely until the epidemic has passed.³¹ The majority of the physicians reported that they had diagnosed at least one new breast cancer patient during the pandemic. The recent trends in Saudi Arabia show that the prevalence of BC is increasing; in Saudi Arabia, the prevalence rate is 53%.³² About 46% of the physicians in this study reported having encountered a confirmed case of COVID-19 with breast cancer. It is reported that the severity of complications increases in cancer patients infected with COVID-19, and the need for intensive care is much greater than for non-COVID-19 cancer patients.³³ But at the same time, it's not clear that having a history of cancer increases the risk of serious complications in COVID-19 patients. The higher risk for serious complications in BC patients with COVID-19 stems from the physiological and psychological strain they experience. In addition, certain chemotherapy medicines and targeted therapies can further weaken the immune system and also cause lung problems.^{34,35}

Most of the physicians in this study found that the most difficult part of breast cancer management during COVID-19 is surgery. This may be due to a decrease in the availability of equipment like ventilators and PPE, and to available intensive care units and inpatient beds being targeted for the care of COVID-19 patients. Also, the regional prevalence of transmission plays an important role in determining a hospital's capacity for care.³⁶ During the pandemic, many BC patients have worried about visiting hospitals for chemotherapy and other supportive measures. It is clear from these findings that physicians are struggling to deliver proper care to BC

patients in these pandemic times due to stress and lack of essential resources, making health care more prone to error. Medical and surgical oncologists should be aware of the different strategies and limitations in treating BC patients during this pandemic to avoid costly mishaps.

The mortality rates in COVID-19 infected cancer patients are almost three times higher than those in COVID-19 patients without cancer.³⁷ Thus, breast cancer patients are vulnerable to COVID-19 infection and become a high priority group for receiving the COVID-19 vaccine. According to recommendations from the centers for disease control and prevention (CDC) and the advisory committee on immunization practices (ACIP), cancer patients comprise the top priority groups recommended for vaccination ahead of others.³⁸ Optimistically, data from different countries that are leading the COVID-19 vaccination campaign report no additional safety concerns so far with cancer patients.³⁹ A recent cohort study noted that two doses of the SARS-CoV-2 BNT162b2 vaccine showed satisfactory serological findings with no additional safety issues in cancer patients.⁴⁰ It is recommended that a shorter duration between the two doses of vaccine (21 days from the first dose to the second) be followed for cancer patients to guarantee adequate immune response.⁴¹ The authors of this research strongly encourage the ministry of health of the Kingdom of Saudi Arabia to prioritize vaccination for BC patients regardless of whether the patient is on anticancer therapies or has active disease. Furthermore, it is suggested that BC patients be given SARS-CoV-2 vaccine one week after initiation of the chemotherapy cycle, as clinical reports show that vaccination on the fourth to fifth day of the chemotherapy cycle produces more immunogenic response than on day one of the cycle.⁴²

Limitations

This study discusses a recent disease that has few references.

CONCLUSION

The study's findings show that the active COVID-19 pandemic has led to a more stressful situation among physicians, which has affected the management of breast cancer patients. COVID-19 is reshaping the delivery of not only breast cancer care but also general oncology practice. These shifts in clinical practice might endure well beyond the short- to mid-term of this pandemic and should be accompanied by improved training and awareness among health-care workers, increased infrastructure, and evidence-based support. Currently, due to the availability of effective vaccination and more understating of COVID-19, we believe that breast cancer operations should be performed on their scheduled dates.

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