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Peer Review File

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Reviewer 1:

I really enjoyed reading this work and I think it brings some novel insights to the question of breast imaging during covid-19 pandemic. I really liked your experience as justification for recommendations (inductive reasoning). I have only minor suggestions.
- I had a small dilemma on categorizing the article. The design could be clearer in the introduction.
- Although abstracts might be unstructured, some improvements can be made. For example, you can use up to 350 words, and you used less than 150. Why not also point some of your findings here (like "wearing masks and maintaining social distancing", "For patients with a recent BC diagnosis, we encourage injection [vaccine] in the contralateral arm", etc)? Although the article is open-access, many readers will only read the abstract available at search databases.
- You could structure and number the sections of your article.
- The paragraph within the lines 187-189 could be moved to introduction, to provide more background.
- Your own experience on teleradiology and mental health prevention is not clear.
- I miss a conclusion section, and a sentence about your experienced limitations.

ANSWER:

Dear Reviewer,
Many thanks for your comments and your overall positive feed-back of our review.
With the aim to improve the quality of our paper, according with your valuable suggestions, we have made the following changes:

- **In the introduction we have included the categorization of our paper according to the guidelines of the journal as "editorial comment":**
  In this editorial commentary, we discuss 5 lessons that breast radiologists working in a referral Institute for breast cancer care located in Lombardy (the area in Italy most affected by COVID-19) have learnt in the past two years.
- **Abstract was improved as suggested, adding some details for readers who not have time to read all the paper, as follows:**

  The impact of COVID-19 on the world of breast cancer care has been unprecedented, with worrisome short- and long-term consequences, and there remains a long road ahead to recover and unbury the breast imaging departments from their current backlog.

  Radiologists have to consider what the new normal will be going forward. At present time, because of widescale COVID-19 vaccination, benign vaccine-related reactive lymphadenopathy is likely to be encountered in oncologic patients and we need data-driven guidelines to manage unilateral lymphadenopathy and avoid unnecessary biopsies. In the next years, some procedures like wearing masks and maintaining social distancing will probably remain in use, as radiologists show patients that they are concerned about patient safety. Accordingly, odds are it will incorporate novel protocols for patient safety, innovative technologies (such as telemedicine and Artificial Intelligence algorithms), and changes in radiology workflow to create an environment that feels safe to both patients and radiologists, preventing backlogs

(preventive service must not to be declined anymore) and burnouts (we need to take medical staff's mental health seriously).

However, there is hope on the horizon with new lessons learned from this pandemic that can help clear the backlog and improve the working in breast imaging departments to achieve what is most important: saving lives in the fight against breast cancer.

- **We numbered the sections of our paper**
- **We better discussed in the text our own experience on teleradiology, as follows:**
  Accepting the suggestions of radiologists, our Institute implemented home PACS, moving from 100% of radiologists onsite to 80% reading CT and chest X-ray from home within a few weeks. However, for breast radiologists happened at much lower levels as this process is more complicated for breast imaging due to the need to be on site for diagnostic (like the ultrasound "second look" of MRI findings) and interventions.

  Overall, telehealth increased in our Institute, for patient surgery, oncology, and genetics appointments, as well as for multidisciplinary tumor boards moved to virtual platforms, similarly to what happened with educational conferences and lectures (23).

  Most of the radiologists of our department (22/40) believed that teleradiology would continue and lead to increased efficiency, similarly to what has been reported by a survey of the American College of Radiology (24).

  …and mental health prevention, as follows:
  As mentioned before, teleradiology may increase radiologist morale, flexibility, and even potentially productivity but its real effects still remain unclear: alternatively it may decrease collaborations, interfacing with multidisciplinary colleagues, educational value, or productivity indeed, with a long-term negative impact on radiologists' mood (23).

  Nevertheless, the issue of burnout and fatigue among the staff has also persisted and likely worsened under the strain of the pandemic, negatively impacting quality of work and workforce morale. An internal survey showed that 60% of breast radiologists experimented more fatigue and stress during the last two years. If these issues are not managed, each of these factors can lead to a vicious cycle in which breast screening backlogs are extended rather than reduced (27)

- **We included a conclusion section, as follows:**
  Since the beginning of 2020, our medical staff demonstrated the remarkable resilience in adapting quickly to the new demands forced by the COVID-19 pandemic. Although our radiology departments have already been functioning at pre-pandemic capacity since the first surge of the pandemic subsided, there are some lessons we have learn to be ready for future waves of COVID-19 pandemic and for future pandemics. Moreover, the above mentioned 5 lessons learned from this pandemic can help clear the backlog and improve the working in breast imaging departments to achieve what is most important: saving lives in the fight against breast cancer.

We hope to have appropriately answered to your concerns and that the paper revised following your comments and the other reviewers' suggestions finds your standard of quality and it is worth of publication in Journal of Public Health and Emergency.

Reviewer 2:

The impact of the COVID-19 pandemic on breast cancer screening for early detection of breast and overall cancer care is still yet to be determined. The pandemic continues to highlight challenges faced by all healthcare systems, including radiology departments worldwide. In this opinion/commentary manuscript entitled "What Breast Radiology Departments Have Learned from Two Years of COVID-19 Pandemic", the authors discuss the impact and lessons learned from the pandemic at their breast center in Italy. As a strength in this paper, they have included what the potential "new normal will be" with the forward thinking of assistance (patient prioritizing) using artificial intelligence. In addition, the inclusion of the mental health/well-being amongst radiologists is a very timely. Weaknesses of the manuscript include the sections on "First: patients' safety" and "We need guidelines for unilateral lymphadenopathy in (vaccinated) cancer patient" – both should be expanded. I have included questions below to assist in those sections, as well as, several other.

-I would recommend shorting the title to: What Breast Imagers Have Learned from the COVID-19 Pandemic

-line 149 "Although some international policies relaxed the masking guidance for those who have been fully vaccinated (7), radiologists in our hospital must still be masked all the time inside the hospital, especially when meeting patients.

Please expand this section: Do the patients still wear masks or only the radiologists? What about the mammography technologists, front desk staff, and other hospital personal? Does your hospital staff "screen" patients with questions before they are allowed to enter the building? Your site could vary from others in your city or country. When did this "relaxation take effect" – dates? And what was the protocol of mask wearing prior to this time and before vaccinations were available?

-Line 168 At present, no data are available regarding the duration of radiologically evident lymphadenopathy or appropriate follow-up intervals. Therefore, management recommendations are varied, including biopsy, immediate additional imaging with ultrasound, short-interval imaging, and clinical follow up (11).

-Please refer to the 2 references listed below. I would recommend including this information as part of the revisions.

"SBI Recommendations for the Management of Axillary Adenopathy in Patients with Recent COVID-19 Vaccination" [Society of Breast Imaging Patient Care and Delivery Committee} Lars Grimm et al. 2020.

Lehman CD, et al. Unilateral Lymphadenopathy After COVID-19 Vaccination: A Practical Management Plan for Radiologists Across Specialties. J Am Coll Radiology 2021.

-Line 207 Breast-imaging departments have reopened with reduced capacity due to increased COVID-19 safety protocols

Please define & explain "reduced capacity"? How much is it reduced compared to pre-pandemic numbers for screening and for diagnostic exams? Does this include breast MRI studies? What type of safety protocols have been put in place by your clinic? Are patients takening directly to the mammography/ultrasound room to change and be imaged? Are dressing rooms/common areas no longer used by your patients? In addition to cleaning the imaging systems, is the rest of each room cleaned after each patient use - wipe down chairs/ door handles, etc.?

-Line 253: Nevertheless, the issue of burnout and fatigue among the staff has also persisted and likely worsened under the strain of the pandemic, negatively impacting quality of work and workforce morale.

I agree that it is very important to include mental health (as many other physicians have worked from home) and breast imagers have had to be on the front lines/physically present since the beginning of the pandemic.

I would recommend included how it may have affected (and continues to affect) male and female breast radiologists & mammography technologists.

-Reference number 10 is listed as an invalid citation.
This must be addressed.
Otherwise, the references are appropriate.

Dear Reviewer,
We are grateful for the accurate review of our paper and for your valuable comments. We tried to solve all the specific comments you rightly pointed out, hoping to have improved the quality of our manuscript according to your points.
In the following list, you can find your points pasyed and our response just below:

-I would recommend shorting the title to: What Breast Imagers Have Learned from the COVID-19 Pandemic

Done, many thanks for this valuable suggestion! We just changed "breast imagers" with "breast radiologists" as our paper, although considered all the staff working in our department, is essentially based on radiologists.

-line 149 "Although some international policies relaxed the masking guidance for those who have been fully vaccinated (7), radiologists in our hospital must still be masked all the time inside the hospital, especially when meeting patients.
Please expand this section: Do the patients still wear masks or only the radiologists? What about the mammography technologists, front desk staff, and other hospital personal? Does your hospital staff "screen" patients with questions before they are allowed to enter the building? Your site could vary from others in your city or country. When did this "relaxation take effect" – dates? And what was the protocol of mask wearing prior to this time and before vaccinations were available?

We agree with your suggestions. We expanded the section as follows:
Despite, during summer 2021, policies of some nations relaxed the masking guidance for those who have been fully vaccinated (7), all the staff in our Institute (similarly to other Italian hospitals) must still be masked all the time inside the hospital, although it is currently mandatory by a Italian law for health personnel to have completed the vaccination course. Even if vaccinated, both staff and outpatients are still screened for COVID-19 through questionnaires and temperature checks before entering our Institute. All non-urgent outpatients are informed that, in the presence of fever, cough and/or flu-like symptoms, our medical staff will evaluate the case to post-pone/schedule another appointment. All in-patients undergo the reverse transcription polymerase chain reaction test performed on respiratory samples obtained by a nasopharyngeal swab the day before their hospitalization. Finally, we have introduced visiting restrictions to protect our patients, who may be vulnerable due to their oncological condition. On the other hand, we recognized that families and friends have an important role in meeting the care needs of many patients, both before admission to hospital and following discharge, so there were exceptions for patients who require the support of a carer. Such exceptions were at the discretion of our medical doctors: if the risk of passing on COVID-19 is too high, carers may not always be allowed to enter in our Institute. In the latter case, we have put in place a range of ways for patient's family to speak with clinical staff.
Some procedures like wearing masks and maintaining social distancing will probably remain in use long-term (like mask-wearing became more common across East Asia after the 2003 SARS outbreak) (8), as radiologists show patients that they are concerned about patient safety.

-Line 168 At present, no data are available regarding the duration of radiologically evident lymphadenopathy or appropriate follow-up intervals. Therefore, management recommendations are varied, including biopsy, immediate additional imaging with ultrasound, short-interval imaging, and clinical follow up (11).
Please refer to the 2 references listed below. I would recommend including this information as part of the revisions.
"SBI Recommendations for the Management of Axillary Adenopathy in Patients with Recent COVID-19 Vaccination" [Society of Breast Imaging Patient Care and Delivery Committee} Lars Grimm et al. 2020.
Lehman CD, et al. Unilateral Lymphadenopathy After COVID-19 Vaccination: A Practical Management Plan for Radiologists Across Specialties. J Am Coll Radiology 2021.

We have modified this section, also including the two important references you kindly suggested us, as follows:
(…) In the meantime, reports of subclinical axillary lymphadenopathy identified on the side where COVID-19 vaccination was administered are rising rapidly, although axillary adenopathy has rarely been reported following the administration of other, non-COVID-19 vaccines and, in trials, it was reported only in 1.1% of Moderna cohort participants and in 3% of Pfizer-BioNTech cohort participants (10). In these cases, lymphadenopathy was reported based on physical examination rather than by using imaging and it was only reported as an unsolicited adverse event. AccordinglytheAccordingly, the true incidence rate is likely higher.
At present, no data are available regarding the duration of radiologically evident lymphadenopathy or clinically validated follow-up intervals, and the management approach to unilateral axillary adenopathy in patients who recently received a COVID-19 vaccine is based at this point on expert consensus opinion (11). Therefore, management recommendations are varied, including biopsy, immediate additional imaging with ultrasound, short-interval imaging, and clinical follow up (12).. The Society of Breast Imaging (SBI) recognized that there are a variety of valid approaches to this clinical situation and encourage a conservative approach, which stresses an abundance of caution (11). According with SBI considerations, anticipated high rates of false positive recalls for additional imaging and/or biopsy of transient reactive nodes can be reduced by following the ACR BI-RADS management recommendations for unilateral lymphadenopathy in the setting of a known inflammatory cause that supports a benign assessment (13).
In our department, similarly to the approach proposed by Lehman et al. (12, 14), we use six weeks to define recent vaccination and for patients with suspicious findings in the breast (BI-RADS 4 or 5), management of the ipsilateral adenopathy is at the discretion of the dedicated breast radiologist based on suspicion of the breast lesion and lymphadenopathy appearance. For patients with a recent BC diagnosis, presenting in the pre-/peri-treatment setting, we encourage injection in the contralateral arm. However, because of widescale vaccination, lymphadenopathy due to COVID-19 vaccination is likely to be encountered in oncologic patients and we need data-driven guidelines to manage unilateral lymphadenopathy and avoid patient emotional stress as well as unnecessary biopsies of benign vaccine-related reactive lymphadenopathy (12). In this clinical scenario, management should be decided by consultation between the oncology treatment team and radiologists.
The aim of the recent recommendations (11, 14) is to reduce patient anxiety, provider burden, and costs of unnecessary evaluation of lymphadenopathy in the setting of recent vaccination and to avoid further delays in vaccinations and recommended imaging for best patient care during COVID-19 pandemic (14).

Line 207 Breast-imaging departments have reopened with reduced capacity due to increased COVID-19 safety protocols
Please define & explain “reduced capacity”? How much is it reduced compared to pre-pandemic numbers for screening and for diagnostic exams? Does this include breast MRI studies? What type of safety protocols have been put in place by your clinic? Are patients takening directly to the mammography/ultrasound room to change and be imaged? Are dressing rooms/common areas no longer used by your patients? In addition to cleaning the imaging systems, is the rest of each room cleaned after each patient use - wipe down chairs/ door handles, etc.?

We included this paragraph in section “Preventive service must not be declined anymore”:
Although in our Institute the number of breast imaging examinations provided to patient in 2021 are back in line with those of the pre-pandemic era, many breast-imaging departments have reopened with reduced capacity due to increased COVID-19 safety protocol. For instance, all machines (mammography and MR scans) and their parts (US probes) should be cleaned by radiologist technician with 1,000 mg/L chlorine-containing disinfectant [13] after each examination, and facilities have added social distancing measures, such as limiting the number of chairs in waiting rooms and scheduling appointments 30 minutes apart or on alternate days (3). Accordingly, many hospitals had to defer routine diagnostic work that normally would allow breast cancer to be diagnosed and treated earlier (3, 19, 20): these delays may collectively contribute to later-stage diagnosis, during which women have a lower probability of surviving breast cancer (18).

We believe that including the number of exams (including biopsies, MRI etc) of 2019, 2020 and 2021 may be redundant and useless for the aim of this paper. However, we can provide them and include into the paper if you think it will add value to the manuscript.

-Line 253: Nevertheless, the issue of burnout and fatigue among the staff has also persisted and likely worsened under the strain of the pandemic, negatively impacting quality of work and workforce morale.
I agree that it is very important to include mental health (as many other physicians have worked from home) and breast imagers have had to be on the front lines/physically present since the beginning of the pandemic.
I would recommend included how it may have affected (and continues to affect) male and female breast radiologists & mammography technologists.

Following your valuable inputs, we included the following part in the section about Mental Health:

Accepting the suggestions of radiologists, our Institute implemented home PACS, moving from 100% of radiologists onsite to 80% reading CT and chest X-ray from home within a few weeks. However, for breast radiologists happened at much lower levels as this process is more complicated for breast imaging due to the need to be on site for diagnostic (like the ultrasound “second look” of MRI findings) and interventions.
Overall, telehealth increased in our Institute, for patient surgery, oncology, and genetics appointments, as well as for multidisciplinary tumor boards moved to virtual platforms, similarly to what happened with educational conferences and lectures (23).
Most of the radiologists of our department (22/40) believed that teleradiology would continue and lead to increased efficiency, similarly to what has been reported by a survey of the American College of Radiology (24).

-Reference number 10 is listed as an invalid citation.
Apologise for that! We fixed it (it was probably due to a Endnote's bug).

We really hope to have appropriately answered to your concerns and that the paper revised following your valuable comments (together with the other reviewers' suggestions) finds your standard of quality and it is now worth of publication in JPHE.