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Treatment outcome and follow-up pattern of breast cancer patients with locally advanced and/or metastatic disease receiving intravenous chemotherapy during COVID-19 Pandemic: A descriptive correlational study

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ABSTRACT

The study determined the impact COVID-19 pandemic on treatment outcomes and follow-up patterns of breast cancer patients at Bicol Cancer Center of Bicol Regional Training and Teaching Hospital (BRTTH). The study utilized a retrospective and descriptive study. Of the 108 breast cancer patients, 73 or 67.59 percent had followed up as scheduled during the pandemic; while there was 35 or 32.41 percent who had delayed follow-up. Of the total number of subjects with treatment delays, there were 7 or 6.48 percent with the stable disease while 24 or 22.22 percent were already found with progressive disease. For breast cancer patients with no treatment delays, there was 71 or 65.74 percent with stable disease and 6 or 5.56 percent were found to have a progressive disease. A chi-square test of independence was performed to examine the comparison of outcomes between those with treatment delay and those with no treatment delay. The relation between these variables was significant, X2 (1, N = 108) = 49.9951, p = <0.00001. Patients with no treatment delays were more likely to have a stable disease compared to those with treatment delays. There is a high percentage of follow-ups as scheduled despite the COVID-19 pandemic. The incidence of progressive disease is higher among patients who received treatment delay as compared to those who did not have treatment delay. Patients with breast cancer who do not follow up as scheduled which causes treatment delays are at higher risk of having more severe or progressive disease.

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INTRODUCTION

The Coronavirus Disease (COVID-19) pandemic has fundamentally affected human life and changed the world. The occurrence of this disease, which originated in Wuhan China in December of 2019, was unforeseeable and has spread around the globe like a wildfire; resulting in countries imposing lockdowns to mitigate the extent of damage caused by the virus. This pandemic had a major economic drawback. As the number of cases started to increase globally, mainly in the United States, Italy, Germany, France, and South Korea, the world financial markets had significantly declined. Big and small businesses started to close one by one, leaving almost 81 million jobs lost as reported by Asia-Pacific Employment and Social Outlook 2020 (APESO 2020). The mandatory isolation has crippled not only the economy but the healthcare system as well.

There has been a challenge in providing access to healthcare during the time of the pandemic. According to World Health Organization (WHO), the coronavirus response continues to mobilize resources worldwide and has adversely affected the delivery of care services not only in communicable but also in the non-communicable diseases including cancer. A study conducted by WHO in June 2020 revealed that 41% of countries reported disrupted services in treating cancer during the sporadic cases of COVID-19. In third-world countries like the Philippines, the delay in treatment of cancer patients is prominent due to scarce resources and the limited availability of treatment options. This pandemic even poses immense pressure in utilizing these limited resources to give appropriate care, especially in cancer patients undergoing treatments like chemotherapy.

Cancer remains the leading cause of death and is an important barrier to increasing life expectancy in every country of the world (Sung, 2021). According to Global Cancer Statistics 2020 (GLOBOCAN 2020), female breast cancer is now the most commonly diagnosed cancer (11.7% of total cases) and is still the leading cause of cancer death in women. It has now surpassed lung cancer (11.4% of total cases) as the world's most commonly diagnosed cancer; proof that the global cancer landscape is changing (WHO, 2021). In 2017, the Philippines has the highest incidence of breast cancer in Asia with one (1) in every 13 Filipino women at risk of acquiring it in her lifetime. Until today, while overcoming the challenges brought about by this pandemic, breast cancer still comprises a huge percentage of oncologic hospital admissions and remains the leading cause of cancer in the country according to an article entitled Philippine Society of Medical Oncology (PSMO) Consensus Recommendations for Management of Breast Cancer in (COVID-19) Era which was published in August 2020. This study aims to impart information as to how the approach would be on new management recommendations of breast cancer patients at the time of the COVID-19 pandemic.

OBJECTIVES

The impact of the COVID-19 pandemic on breast cancer patients affects generally their overall health due to fears and uncertainties brought about by this disease. These uncertainties cause anxiety in patients to visit the hospital for follow-up check-ups, especially during the lockdown period. This study aims to determine the impact of COVID-19 pandemic on treatment outcomes and follow-up patterns of breast cancer patients at Bicol Cancer Center (BCC) of Bicol Regional Training and Teaching Hospital (BRTTH) from March 15, 2020, to September 15, 2020. It specifically aims to answer the following objectives:

1. To determine the follow-up pattern of patients during COVID-19 pandemic lockdown from March 15, 2020, until September 15, 2020.
2. To determine the treatment outcomes of patients during COVID-19 pandemic.
3. To determine the significant difference between the treatment outcomes of the patient during a pandemic when grouped according to their follow-up pattern.

METHODS

To determine the impact of COVID-19 pandemic on the treatment outcomes of a breast cancer patient, the study utilized a retrospective and descriptive study. This design aimed to correlate the treatment outcome and follow-up

pattern of patients during COVID-19 pandemic lockdown. The time frame of this research was from March 15, 2020, until September 15, 2020, which represented the peak of the pandemic in the Philippines during that year.

Population and sampling technique

To provide accurate and reliable data, the expertise of a statistician was sought to determine the appropriate sample population for this research. The researcher employed a total enumeration technique, a type of purposive sampling design, wherein all patients who satisfied the inclusion and exclusion criteria within the given time frame were included in this study. The study included all patients with locally advanced or metastatic breast cancer who were diagnosed at the Bicol Cancer Center (BCC) before COVID-19 pandemic lockdown on March 15, 2020. The patients must be undergoing systemic intravenous chemotherapy during the lockdown period from March 15, 2020, until September 15, 2020. Patients who were diagnosed during COVID-19 lockdown or specifically during March 15, 2020, until September 15, 2020, were excluded since the study only aimed at the impact of COVID-19 pandemic on the treatment outcome and follow-up pattern of patients during the aforementioned period. Patients not diagnosed with locally advanced or metastatic breast cancer regardless of their histologic classification were excluded from this study. Breast cancer patients not on systemic intravenous chemotherapy and were only taking oral hormonal treatments were excluded as well. This also excluded patients diagnosed with other than breast cancer. Breast cancer patients whose chemotherapy was delayed due to chemotherapy side effects or toxicity were also excluded from this study. No withdrawal criteria were observed in this study since the researcher did a retrospective analysis of patients' data through a chart review.

Data collection and procedure

The researcher sought approval from the department of internal medicine of the Bicol Regional Training and Teaching Hospital (BRTTH), and technical review committee and acquired an endorsement letter to the Institutional Review Board (IRB) and was forwarded to the BRTTH medical center chief and sought consent to conduct research. A letter of request was sent to the Head of the BCC to access the database of breast cancer patients that was needed for this research. And then, a letter of request to access medical records was forwarded to data policy officer, and an ethical clearance and approval were also sought from the Institutional Review Board (IRB) of the same institution. A data collection tool was utilized for efficient data gathering. To determine the impact of COVID 19 pandemic on the treatment outcome and follow-up pattern of the patient with breast cancer, the researcher accessed the list of breast cancer patients at Bicol Cancer Center (BCC) and reviewed data from the patient record that was retrieved from the Medical Record Section of the hospital. And then, a chart review was conducted to determine the census of patients with breast cancer and to gather the necessary data needed for interpretation. Various information including treatment outcome and follow-up patterns were identified and interpreted by the researcher accordingly.

Data processing and analysis

Data gathered was entered and organized in Statistical Package for Social Sciences (SPSS) software. Categorical variables were described in terms of frequencies and percentages. These data and results were presented in a tabular form. The expertise of a statistician was sought and SPSS software was utilized as a computing tool for translating and labeling data. The outcome of the study compared the treatment outcomes of patients and their follow-up pattern during COVID-19 pandemic lockdown.To interpret the data, statistical tools were employed. The frequency and percentage were used to organize treatment outcomes and follow-up patterns of the patients. This measured the impact of the COVID-19 pandemic on the treatment outcomes. The researcher measured the degree of difference between the treatment outcomes of patients when grouped according to their follow-up pattern; Chi-square Test was utilized.

Ethical considerations

Subjects of this research had no direct benefit from this study. However, this research will be deemed beneficial to future breast cancer patients because, by determining the impact of COVID-19 pandemic, recommendations can be suggested that could help the patients comply with the treatment regimen and help increase their years of survival. The study also provided benefits to the physicians by providing them with concrete information regarding the impact of COVID-19 pandemic on treatment outcomes of patients with breast cancer. It allowed them to re-examine their actions and support to minimize the increasing rate of cancer recurrence. The study also provided benefit to the Bicol Cancer Center (BCC) by providing references in making new treatment guidelines and hospital policies that would fit in the new normal setting. And lastly, this study would benefit future researchers by using this as a reference and source of related literature and studies. The disclosure of information that was gathered during this research, intentional or not, was a foreseeable risk that is negligible. In case such risk happens, the researcher shall discontinue the conduct of research, take full responsibility thereto, shall cooperate with any investigating government authority, and shall surrender all copies of gathered data to the hospital for proper safekeeping or disposal. All information that was obtained during this research was treated as private and confidential at all times. In compliance with the Data Privacy Act, an affidavit of non-disclosure (Appendix G) was secured and duly notarized by a lawyer. Data gathered was kept in a locked cabinet at the medical office. Storage of data at the computer was password protected. The researcher did not have any conflict of interest in this study, be it financial, proprietary, or familial considerations. The outcome of this research aimed to determine the impact of COVID-19 pandemic on treatment outcome and follow-up pattern of breast cancer patients during COVID-19 lockdown period. Recommendations were suggested based on the outcomes and conclusions of this study that could help hospital policymakers in amending breast cancer treatment and management protocols that could increase patients' compliance during the new normal setting.

RESULTS AND DISCUSSIONS

These data were organized with textual interpretation to provide better and significant insights into the subject under study. Likewise, data were presented in tables.

Table 1 shows the adherence of patients to the treatment regimen and rate of a hospital visit for the management of their condition, especially during the period of COVID-19 pandemic, which determines their follow-up pattern. Of the 108 breast cancer patients, 73 or 67.59 percent had followed up as scheduled during the pandemic; while there was 35 or 32.41 percent who had delayed follow-up. It reveals that there is a high percentage of follow-up as scheduled despite COVID-19 pandemic. However, there is also a significant percentage of patients who were delayed to follow-up which could result in delayed treatment.

Table 1. Follow-up pattern of patients during COVID-19 pandemic from March 15, 2020 to September 15, 2020

Indicators	f	%
Followed-Up As Scheduled	73	67.59
Delayed Follow-up	35	32.41
Total	108	100

Data presented in Table 2 shows the treatment outcome of patients during COVID-19 pandemic based on their clinical or radiologic evidence. Of the total number of subjects with treatment delays, there were 7 or 6.48 percent with the stable disease while 24 or 22.22 percent were already found with progressive disease. For breast cancer patients with no treatment delays, there was 71 or 65.74 percent with stable disease and 6 or 5.56 percent were found to have a progressive disease. It signifies that there is a higher incidence of progressive disease among patients who received treatment delays compared to those who did not have treatment delays. It implies that early and on-time follow-up would reduce the progression of the disease.

Table 2. Treatment outcome of patients during COVID-19 pandemic based on clinical or radiologic evidence

Indicators	f	%
1. TREATMENT DELAY		
• Stable Disease	7	6.48
• Progressive Disease	24	22.22
2. NO TREATMENT DELAY		
• Stable Disease	71	65.74
• Progressive Disease	6	5.56
Total	108	100 %

A chi-square test of independence was performed to examine the comparison of outcomes between those with treatment delay and those with no treatment delay. The relation between these variables was significant, X2 (1, N = 108) = 49.9951, p = <0.00001. Patients with no treatment delays were more likely to have a stable disease compared to those with treatment delays. It implies that those patients with breast cancer who did not follow up as scheduled and therefore had treatment delays are at higher risk of having more severe or progressive disease.

Table 3. Comparison of outcome between those with treatment delay from those with no treatment delay

	Patients (n)	Treatment Delay (n)	No Treatment Delay (n)	*P-Value*
Stable Disease	78	7	71	
Progressive Disease	30	24	6	< 0.00001
Total	108	31	77	

The Coronavirus Disease (COVID-19) pandemic has fundamentally affected human life and changed the world; especially to those patients with breast cancer who need constant follow-up to their respective health institutions for continuous monitoring, care, and treatment. Even up to this year, cancer remains the leading cause of death and is an important barrier to increasing life expectancy in every country of the world. The delay in the treatment of cancer patients is prominent due to scarce resources and the limited availability of treatment options. This pandemic even poses immense pressure in utilizing these limited resources to give appropriate and consistent care especially in cancer patients undergoing treatments like intravenous chemotherapy.

It becomes a challenge to government institutions like the Bicol Regional Training and Teaching Hospital (BRTTH) in providing access to healthcare during the time of the pandemic. The rising number of COVID-19 cases in the Bicol Region specifically in Albay where BRTTH is located has converted the said institution to a COVID-19 referral hospital. The public, which incited fears and anxieties from acquiring COVID-19 disease, had known this status of the hospital, which hindered them from seeking regular hospital visits. The COVID-19 pandemic lockdown suddenly shifted the activities of daily living of every Filipino, specifically the immuno-compromised like breast cancer patients who needed regular hospital visits, from having easily accessible public transportation in going to healthcare institutions to the difficulty of going to hospitals due to unavailability of transportation services; plus other factors like patient's personal reasons, changes in Bicol Cancer Center (BCC) outpatient department clinic schedule, strict implementation of triage screening, that are already beyond the scope of this study.

The impact of COVID-19 pandemic on patients with breast cancer affects their overall health due to fears and uncertainties brought about by this disease. These uncertainties cause anxiety to patients to visit the hospital for

follow-up check-ups, especially during the lockdown period. The follow-up pattern of breast cancer patients during the COVID-19 pandemic shows the adherence of patients to the treatment regimen and rate of a hospital visit for the management of their condition. It reveals that there is a high percentage of follow-ups as scheduled despite the implementation of COVID-19 pandemic lockdown. However, there is also a significant percentage of patients who are delayed to follow-up, which resulted to further delays in treatment. Treatment outcome of patients during COVID-19 pandemic based on clinical or radiologic evidence shows that there is a higher incidence of progressive disease among patients who received delayed treatment as compared to those who did not have treatment delay. They are also at risk of having poorer outcomes, more late-stage diagnoses, and cancer-related deaths in the months and years to come.

CONCLUSIONS AND RECOMMENDATIONS

Based on the salient findings of this study, the following conclusions are drawn: There is a high percentage of follow-up as scheduled despite COVID-19 pandemic. The incidence of progressive disease is higher among patients who received treatment delay as compared to those who did not have treatment delay. Patients with breast cancer who do not follow up as scheduled which causes treatment delays are at higher risk of having more severe or progressive disease.

Based on the conclusions, the following are the recommendations: Patients should actively impart in health education and promotion regarding the importance of returning for follow-up check-ups as scheduled. Emphasize the effects of delayed treatment and follow-up on the progression of breast cancer. Encourage physicians to strengthen a continuous communication line among patients through online consultation or telemedicine that are spearheaded by oncologists or general internists who specifically cater to breast cancer patients. Adapt clinical practice guidelines that could help in the re-organization of current cancer services being offered and must be based on the pressing issues in the healthcare delivery system brought about by COVID-19 pandemic, such as maximizing the use of limited resources for cancer management. Promote the need for new program implementation like psycho-oncological support to patients during pandemics especially to those who have treatment delays. Create a more systematic and computerized census of breast cancer patients for easy determination of the next treatment schedule and follow-up. Develop a mechanism of monitoring patients through creating a partnership with rural health centers or barangay health stations through a proper referral system. Develop an online or SMS messaging system for clients to remind them of their follow-up check-up and treatment. Support future researches regarding breast cancer patients and/or research that aim to amend cancer treatment guidelines and recommendations that will be applicable in the new normal setting.

LIMITATIONS

One of the limitations of the study was its time frame; the research that was conducted only covered the first 6 months of the lockdown period, but not the entire COVID-19 pandemic era. Another limitation was that the researcher utilized an extensive direct structured chart review of patients only and may be prone to human error and bias. The researcher only included patients with an established diagnosis of breast cancer at BCC of BRTTH before the lockdown period. Other patients enrolled at the said cancer institution not diagnosed with breast cancer were excluded from this study. The research outcome may not entirely represent the overall impact of COVID-19 pandemic on cancer care rendered by BCC.

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