

# Service for Breast Cancer Patients in Cancer Hospital During COVID-19 Pandemic

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**Abstracts:** This research aimed to study services during COVID-19 pandemic. A Retrospective Study was undertaken among 1,901 new breast cancer patients who had been treated with surgery, chemotherapy, or radiotherapy at Cancer Hospital during 2018–2021. Data were collected from the Thai cancer base program and the Thai hospital information system. All data were analyzed by descriptive statistics, One-sample T-test, and Mann Whitney U-test. The study results found that the majority of samples were female (99.4%; with average age of 53 years, S.D.=10.7), marital status or widowed or divorced (87.7%), attended primary school (23.4%), farmers (15.9%), universal insurance coverage (70.8%), stage II breast cancer (35.0%), accessed to treatment within the specified period with surgical therapy (76.4%; average waiting time 22 days, S.D.=11.9), chemical therapy (93.6%; average waiting time 24 days, S.D.=13.1), and radiation therapy (92.6%; average waiting time 26 days, S.D.=17.7). In addition, they accessed level to surgery, chemotherapy, or radiotherapy better than standard with significantly ( $P<0.0001$ ). The pandemic delayed access to surgery and radiation therapy in Cancer Hospital.

**Keywords:** COVID-19, Breast Cancer, Access to Care

## 1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) is an emerging infectious disease that was declared a global pandemic by World Health Organization [1]. On the year 2021, the number of infections and deaths increased rapidly. Globally, the top 3 countries with the highest infection rates were the United States of America, India, and Brazil, while in Southeast Asia the top 3 were Indonesia, Philippines, and Malaysia [2]. Thailand has 13 Public Health Region, the 8th Public Health Region was one area with a high number of COVID patients. The province in the 8th Public Health Region with the highest morbidity rate of COVID-19 was Udon Thani [3].

Coronavirus disease (COVID-19) is an infectious disease caused by SARS-CoV-2 virus. The virus can spread from infected people's mouths or noses in small liquid particles when they cough, sneeze, speak, sing, or breathe. Most people infected with virus will experience mild-to-moderate respiratory illness, with common symptoms being fever, cough, tiredness, and loss of taste or smell [4] [5]. About 15.0 % of people have severe symptoms and mortality rate is 2.0 % [6]. Older people and those with underlying medical conditions, such as cardiovascular disease, diabetes, chronic respiratory disease, or cancer, are more likely to develop serious illness [4] [7].

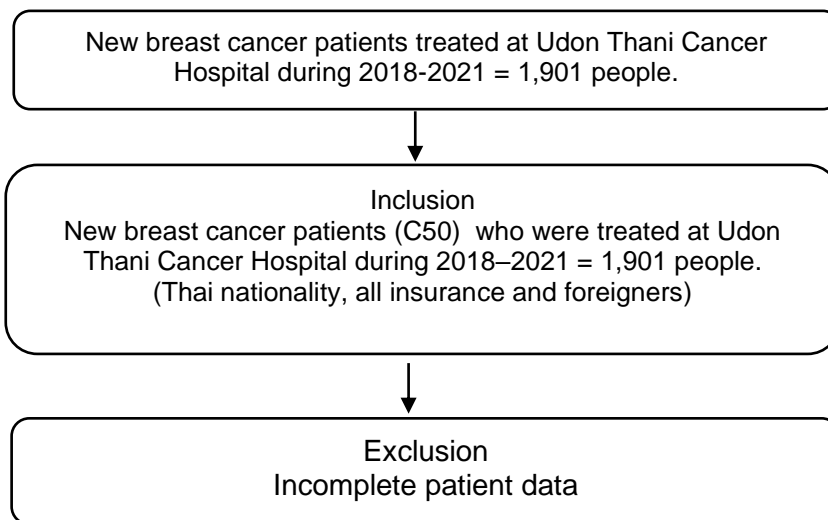
Cancer patients are in a risk group that should be given priority because factors associated with cancer can spread when combined with COVID-19 infection, with a higher chance of death. There had been reports abroad that due to spread of the COVID-19, the diagnosis for new cancer patients was delayed. A lack of proper and continuous treatment can lead to disease progression, severe symptoms, or co-complications, resulting in a fatal outcome [6]. Factors affecting cancer patients' access to care include marital status and family economic status [8]. The breast cancer patients often get delay for treatment because they are initially not concerned about lumps in the breast, especially if there is no accompanying pain. They present at hospital only when their symptoms have not improved, more symptoms, as well as other symptoms [9].

During the pandemic, health service units or hospitals were role in responding to the pandemic, supporting patients and decreasing the mortality rate among infected people [6] [10], increasing access to services and decreasing inequality with a “new normal” medical service to ensure the safety of patients and staff [9]. Furthermore, a referral system was developed, connecting between service units, enabling easier and more convenient access to the service system via online reservation, telemedicine consultation, and postal drug delivery, thus raising the level of safety in infection prevention in healthcare facilities [11] [12]. In addition, there were measures to postpone appointments for patients where this was feasible. Minor surgery was been postponed, while chronic patients lacked good follow-up. Because cancer patients were worried about infection; consequently, appointments were postponed, especially for surgery and chemotherapy. As a result, the symptoms worsen and the disease is more likely spread 22.8 %. It has an impact on the economy and livelihoods [7] [13] [14].

The Cancer Hospital, Department of Medical Services, Ministry of Public Health, Thailand is a hospital specializing in cancer. It provides diagnosis and treatment services for cancer in the areas of surgery, chemotherapy, radiotherapy, and palliative care. Every year, the number of new breast cancer patients is on average 500 cases, with most of these patients receiving treatment for cancer in the invasive phase [15]. During the COVID-19 pandemic, patients were concerned and anxious about catching virus. So, they did not come to hospital for treatment, while the hospitals postponed appointments or treatment to decrease the risk of COVID-19 infection. Some patients may wors in stage of cancer. Therefore, it is necessary to study, and recommend for planning, and caring cancer patients, especially on the event of an emerging or re-emerging infectious disease outbreak in the future. It is reduced the impact of epidemics on access to health service for continuity of care patients and breast cancer patients.

**2. MATERIEL AND METHODS**

**Patients:** The population consisted of 1,901 new breast cancer patients who were treated at Udon Thani Cancer Hospital, Thailand during the year 2018–2021, as shown in Figure 1 [16] [17] [18] [19].



**Figure 1** Flowchart of the population selection process

**Study Design:** This study was Retrospective Research. Secondary data were obtained from the records of new breast cancer patients who were treated at Udon Thani Cancer Hospital, Thailand during the year 2018–2021 in the Thai cancer base program and the Thai hospital information system program.

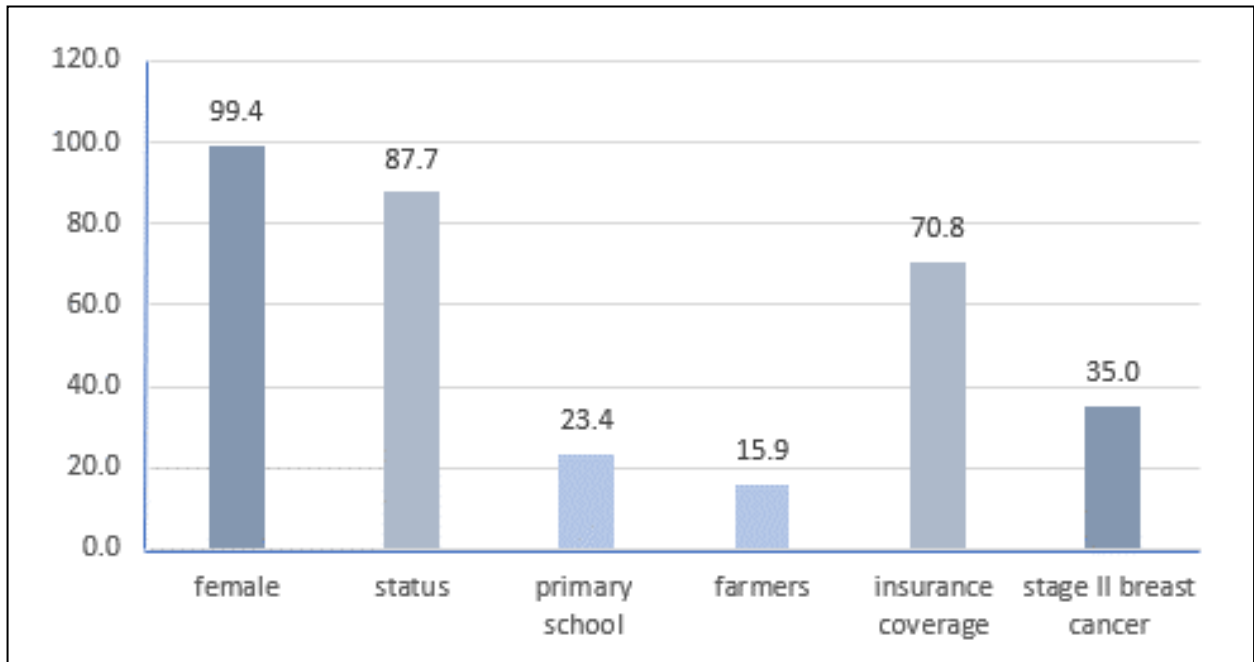
**Statistical Analysis:** 1) Personal factor data were analyzed by descriptive statistics: Frequency, Percentage, Mean, and Standard deviation. 2) Comparison of waiting time to access to care of new breast cancer patients with standard time by One-sample T-test. 3) Comparison of waiting time to access to care within specified period before COVID-19 and during COVID-19 by Mann Whitney U-test.

**Ethics Statement:** This study was considered and approved by the Human Research Ethics Committee of Kasetsart University Research Ethics Committee (KUREC-CSC66/001).

### 3. RESULTS AND DISCUSSIONS

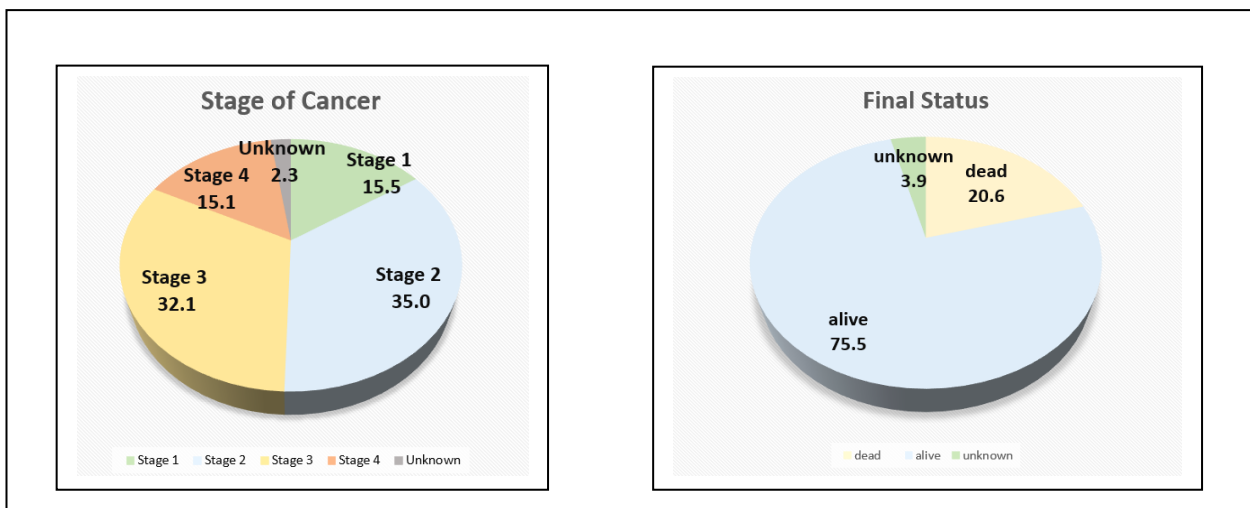
#### Results

The study found that the majority of 1,901 patients were female (99.4%; with average age of 53 years, S.D.=10.7), marital status or widowed or divorced (87.7%), attended primary school (23.4%), farmers (15.9%), universal insurance coverage (70.8%), and stage II breast cancer (35.0%), as shown in Figure 2.



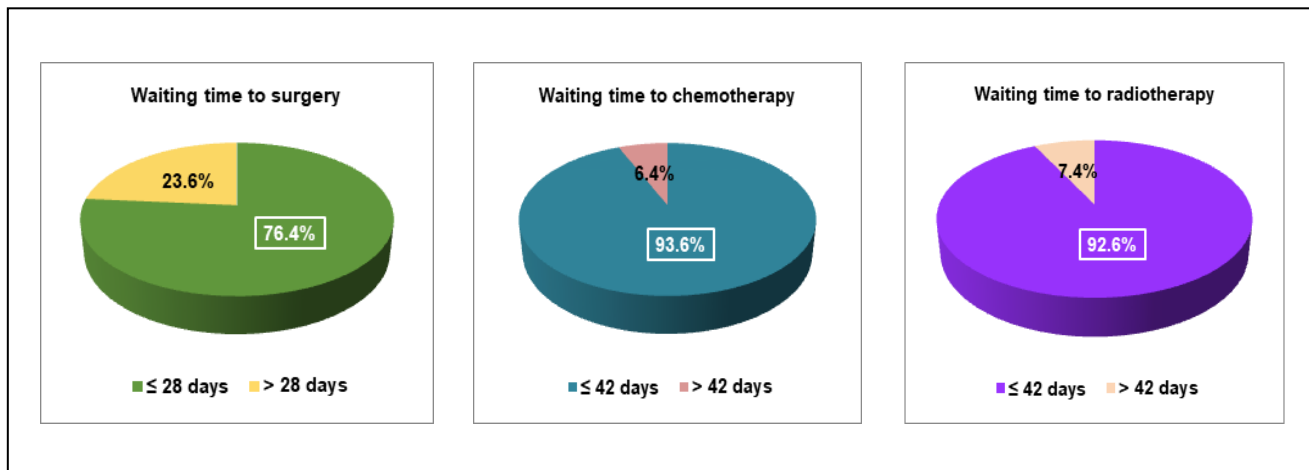
**Figure 2** General data of new breast cancer patients access to care

The stages of cancer include stage 1: 15.5%, stage 2: 35.0%, stage 3: 32.1%, stage 4:15.1%, and unable to determine the stage: 2.3%. In addition, the final status revealed that 20.6 % of patients were dead, 75.5 % were alive, and 3.9 % were unknown, as shown in Figure 3.



**Figure 3** Stage and final status of breast cancer patients access to care

The patients accessed to treatment within specified period with subsequent surgical (76.4%; average waiting time 22 days, S.D.=11.9), received chemotherapy (93.6%; average waiting time 24 days, S.D.=13.1), and received radiotherapy (92.6%; average waiting time 26 days, S.D.=17.7). However, the cancer service plan of the Ministry of Public Health, Thailand is determine the waiting times for access to surgical therapy was ≤ 28 days, chemotherapy therapy was ≤ 42 days, and radiation therapy was ≤ 42 days, as shown in Figure 4.



**Figure 4** Waiting time to access to care of new breast cancer patients with standard

Access to surgery, chemotherapy, and radiotherapy was better than the standard with statistically significant (P<0.0001). It is determined the waiting times for access to surgery (waiting time standard SX) ≤ 28 days, chemotherapy (waiting time CMT standard) ≤ 42 days, and radiotherapy (waiting time RT standard) ≤ 42 days in order to decrease the waiting time and to improve the treatment outcome, as shown in Table 1.

**Table 1** Comparison of waiting time to access to care of new breast cancer patients with standard time

Comparison	N	Mean	S.D.	t	M.D.	95%CI		p-value
						Lower	Upper	
Waiting time SX	109	22.38	11.95	-6.557	-5.62	-7.30	-3.93	0.000**
Waiting time CMT	721	24.49	13.05	-38.81	-17.51	-18.39	-16.62	0.000**
Waiting time RT	1071	26.51	17.83	-29.40	-15.49	-16.52	-14.45	0.000**

\* Significant at .05 level

\*\* Significant at .01 level

Access to surgery, chemotherapy, and radiotherapy were still serviced on specified period during the COVID-19 outbreak. The averages of waiting time for surgery and radiotherapy were slower than before outbreak with statistically significant (p<.05, p<.01 respectively). But the average waiting time for chemotherapy was faster than before outbreak. However, the service unit could provide services with a waiting period for surgery, chemotherapy, and radiotherapy in accordance with the standard criteria of Ministry of Public Health, Thailand, as shown in Table 2.

**Table 2** Comparison of waiting time to access to care within specified period before and during COVID-19

Service	Mean (SD)		Mann-Whitney U-test	p-value
	before COVID-19	during COVID-19		
Access to surgery	20.92 (12.24)	23.81 (11.56)	-2.212	.027*
Access to chemotherapy	25.18 (14.78)	23.54 (10.16)	-.539	.590
Access to radiotherapy	24.76 (13.52)	28.45 (21.79)	-3.180	.001**

\* Significant at .05 level

\*\* Significant at .01 level

## DISCUSSION

In Thailand, the cancer service plan of the Ministry of Public Health is detailed in the 4<sup>th</sup> strategy for cancer treatment. This includes indicators of access to care within the specified period for the top 5 cancers: types-liver and bile duct cancer, tracheal, bronchial and lung cancer, breast cancer, colorectal cancer, and cervical cancer. The waiting times were determined for access to surgery was  $\leq 28$  days, to chemotherapy was  $\leq 42$  days, and to radiation therapy was  $\leq 42$  days [20], in order to decrease the waiting time and to improve the treatment outcome. However, this study revealed that access to surgery, chemotherapy, and radiotherapy was better than that standard with significantly ( $P < 0.0001$ ).

This study found that the waiting time access to surgery within the specified period for 76.4% of patients (average waiting time = 22 days, S.D.=11.9), which was within the range set for this indicator in the cancer service plan (shortest waiting time for surgery within 6 days and longest within 76 days). Whereas, an Egyptian breast cancer center reported that breast cancer treatment had a hospital waiting time (time from review until commencing treatment whether surgery, systemic therapy or radiotherapy of 37 days), while the mean time for the complete treatment (symptoms to treatment) was 214 days (7.1 months) [21]. Similarly, a retrospective review of the cancer registry and electronic medical record data of 4,462 breast cancer patients who underwent surgery as a first course of treatment during 2006–2016 found that 43.4% were  $> 30$  days [22]. The Butaro Cancer Center of Excellence reported that median time for the operation was 122 days from biopsy if no neoadjuvant treatments were given and 51 days from the last cycle of neoadjuvant chemotherapy [23].

This study, for access to chemotherapy, 93.6% of patients had a waiting time within the specified period was average waiting time 24 days (S.D.= 13.1), followed indicator in the cancer service plan (shortest waiting time for chemotherapy within 24 hours and longest 110 days). In contrast, a safety-net hospital reported the mean period was  $52 \pm 34$  days and for the adjuvant group, the median time from diagnosis to chemotherapy was  $94.5 \pm 53$  days [24].

This study, for access to radiation therapy, 92.6% of patients had a waiting time within the specified period (average of waiting time 26 days, S.D.= 17.7), followed indicator in the cancer service plan (shortest waiting time for radiation therapy within 24 hours and longest 197 days). This was consistent with a study of the waiting period to receive radiation for patients in Health Service Provider Board Office 1 of Thailand that reported the waiting time for radiation therapy overall in the 1<sup>st</sup> Public Health Region was within the indicator range in cancer service plan. Breast cancer patients received the most radiotherapy services. However, the shortest waiting time for radiotherapy is for lung cancer because most of these patients are emergency cases [25]. In contrast, the radiotherapy waiting time in Northern Nigeria for radiation therapy in breast cancer patients from diagnosis to the first radiation treatment was 329 days because of limited resources [26]. Furthermore, whereas a tertiary referral center in Morocco it took 284 days for postoperative radiotherapy in cases of adjuvant chemotherapy [27]. This information may be relevant to future regulations [28].

This study results indicated that access to surgery, chemotherapy, and radiation therapy was better than the standards, which was consistent with the results from the studies on the waiting period to receive radiation of patients in Health Service Provider Board Office 1 and overall in the 1<sup>st</sup> Public Health Region that both reported satisfactory service periods based on indicators in the cancer service plan [25].

Moreover, this study results indicated that access to care during COVID-19 pandemic, breast cancer patients had slower access to surgery and radiotherapy than before COVID-19. This corresponded with a study on surgery delays and survival in breast, lung, and colon cancers. It found that surgery delayed for 12 weeks which might decrease overall survival in breast cancer patients [29]. In addition, a study on radiotherapy during COVID-19 Outbreak, found that the majority of patients were women (64%), were treated for breast cancer (54%), were treated with radiotherapy delayed for 22 patients

(44%). It affects elderly patients and children. However, COVID-19 is disease that affects 1) people of all aged groups such as body organs; health status [30] [31] [32] 2) organization such as public health units, schools, child care centers [33] 3) operational system such as service, accredited evaluation, patient cost [34] [35] 4) community such as disease prevention, disease control, disease surveillance, public health volunteers [36].

## CONCLUSIONS

The results of this study showed that the COVID-19 pandemic delayed access to care for breast cancer patients. Therefore, the service unit should adjust the service system to be more efficient and consistent with pandemic situation.

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