

## Five Years Survival Rate in Cervical Cancer Patients by Stages (FIGO 2018) in National Cancer Institute of Thailand

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**Abstract** Objectives: This study was conducted to determine the survival rate of cervical cancer patients who received treatment at the National Cancer Institute of Thailand from the time of diagnosis until the end of treatment, and to identify the factors that affect the survival rate. Material and Methods: Medical records of cervical cancer patients from 2017-2020 were reviewed. Only patients who started treatment and finished all treatments in National cancer institute of Thailand were included. Results: 531 patients with cervical cancers were analyzed. Mean age was 51. Most cases were squamous cell carcinoma at 75.4%, followed by adenocarcinoma at 18.9%. The distribution of disease was 24.2%, 34%, 35.4% and 6.4% in stage I, II, III, and IV, respectively. The 5-year survival rates are 88% for stage 1, 71% for stage 2, 74% for stage 3, and 40% for stage 4. And we found that only two factors significantly affected the 5 years survival rate were histology and disease stage. Conclusion: The overall 5-year survival rate of cervical cancer patients treated at the National Cancer Institute is favorable and comparable to those in developed countries and other regions in Asia. And the significant impact of disease stage on survival rates suggests that continuous campaigns for screening to detect precancerous lesions and increase early-stage cancer diagnosis will greatly benefit treatment and survival outcomes. (*Thai Cancer J* 2025;45:72-82)

**Keywords:** Cervical cancer, survival rate, cervical cancer in Thailand

### Introduction

Cervical cancer is the third most common cancer in women worldwide. In 2022, according to the Global Cancer Data report, there were 9.2 million new cases of cancer in women globally. Cervical cancer accounted for 6.5% of these cases, following breast cancer (24.5%) and lung cancer (8.4%)<sup>1</sup>. Generally, developing countries tend to have higher incidence and mortality rates compared to developed countries. In Thailand, cervical cancer

is reported as the fifth most common cancer among women, with an age-standardized rate (ASR) of 11.1 per 100,000 population per year<sup>2</sup>. In 2021 according to the data from National cancer institute of Thailand, diagnosis often occurs in advanced stages, with Stage 3 being the most commonly detected among new cervical cancer patients<sup>3</sup>.

A study in 2008 found higher incidence and mortality rates of cervical cancer in Africa and Southeast Asia compared to Western Asia, Western Europe, Australia, New Zealand, and North America. Developing countries also exhibit higher incidence rates and up to three times higher mortality rates compared to developed countries<sup>4</sup>.

Based on a compilation of five-years survival rate studies for cervical cancer patients from various institutions both in Thailand and internationally. Data from the SEER (Surveillance, Epidemiology, and End Results Program; NCI), which collects information from American cervical cancer patients from 2012 to 2018, shows an overall 5-year survival rate of 66.7%. This is categorized by disease spread: localized (Stage 1) with a survival rate of 91.8%, regional (spread to nearby organs) at 59.4%, and distant (spread to other distant organs) at 17.1%<sup>5</sup>. In neighboring countries like Malaysia, where there is significant ethnic diversity among the population, a study published in 2015 found that the overall 5-year survival rate for cervical cancer patients was 71.1%. The study also highlighted significant differences based on ethnicity: Malay patients had the lowest survival rate at 59.6%, followed by Indian patients at 69.5%, and Chinese patients had the highest survival rate at 73.8%<sup>6</sup>. The study from Mumbai published in 2021 gathered data from a total of 1,678 cervical cancer patients. It revealed the 5-year survival rates for cervical cancer patients in Stages 1, 2, 3, and 4 were 84.4%, 80.3%, 65.9%, and 37.1%, respectively. The study emphasized that differing treatments at each stage significantly affected survival rates<sup>7</sup>.

In Thailand, a study published in 2022 by Vachira Phuket Hospital collected data from 226 cervical cancer patients between 2006 and 2015. This study aimed to examine survival rates based on the FIGO 2018 staging system<sup>8</sup>. It found 5-year survival rates for cervical cancer patients in Stages 1, 2, 3, and 4 ranged from 91.7% to 100%, 89.5% to 100%, 50% to 93.8%, and 5.1% to 23.1%, respectively. The study highlighted that lymph node metastasis to the paraaortic region had the most significant impact on survival rates<sup>9</sup>.

Cervical cancer is classified into four stages according to FIGO 2018 guidelines. Treatment at the National Cancer Institute of Thailand follows NCCN guidelines and Thai College of Obstetrics and Gynecology standards. Survival rate refers to the duration from diagnosis to death, influenced by various factors. Studying survival rates aims to demonstrate

treatment effectiveness and stimulate improvements in healthcare systems at national and global levels in the future.

## Material and Methods

### Patient

This study is a retrospective descriptive analysis that involves collecting data from both outpatient and inpatient electronic medical records. Data collection began in 2017, as this was the year the National Cancer Institute of Thailand implemented a computerized system for patient records, which facilitated easier searching and verification of information. Between 2017 and 2020, 905 patients were diagnosed with cervical cancer, and 530 of them received treatment from the start to completion of care at the National Cancer Institute of Thailand. We excluded cervical cancer patients who did not receive treatment at the cancer institute from this study. All 531 patients underwent initial evaluation, staging work-up, histological confirmation, and participated in the tumor conference for multidisciplinary evaluation and treatment decisions. All patients will receive standard treatment according to their stages, including surgery, concurrent chemoradiation, and systemic chemotherapy. The waiting time for treatment refers to the number of days from diagnosis to the initiation of treatment.

### Statistical Analysis

Descriptive statistics, including proportions, means, and standard deviations, were used to assess patient characteristics. Overall survival duration was calculated from the date of diagnosis to death or censoring at the last evaluation. Time-to-event data were analyzed using the Kaplan–Meier method, and survival rates were reported for 1, 2, 3, 4, and 5 years. Univariable and multivariable analyses using a Cox regression model were performed to identify independent risk factors for survival. A p-value of less than 0.05 was considered statistically significant.

## Result

All 531 cases were included in this study. The baseline characteristics are shown in Table 1. The mean age was 51 years, 86.5% were multiparous, the percentages of individuals with comorbidities were as follows: 17.2% for hypertension, 8.1% for diabetes mellitus (DM), and 3.6% for HIV, respectively. The distribution of disease was 24.2%, 34%, 35.4% and 6.4% in stage I, II, III, and IV, respectively. Most cases were squamous cell carcinoma at 75.4%, followed by adenocarcinoma at 18.9%, and other cell types at 5.7%. The median waiting

time for treatment was 59 days (IQR 39,82). The mean follow-up time was 36.5 months, ranging from 2 to 88.5 months.

**Table 1 Baseline characteristic of patients**

General	Number of case	Percent (%)
Age (years) mean, SD	51.37 (mean)	12.02 (SD)
Marital status		
Married	26	4.9
Unmarried	474	89.4
Unknown	30	5.6
Para		
Nulliparous	59	11.1
Multiparous	379	71.5
Missed	92	17.4
Hypertension	91	17.2
DM	43	8.1
HIV	19	3.6
Histology		
Squamous cell carcinoma	400	75.4
Adenocarcinoma	100	18.9
others	30	5.7
Stage		
1	128	24.2
2	180	34.0
3	188	35.4
4	34	6.4
Waiting time for treatment (days) median, IQR	59.0 (median)	39.0, 82.0 (IQR)
Follow up time (months)		
mean, SD	36.5, 18.5	
min, max	2.1, 88.5	

Table 2 presents the 1-, 2-, 3-, 4-, and 5-year survival rates for cervical cancer patients, categorized by stage. The data show that the survival rates decrease with the worsening severity of the disease. The 3-year survival rates are 98% for stage 1, 85% for stage 2, 83% for stage 3, and 40% for stage 4. The 5-year survival rates are 88% for stage 1, 71% for stage 2, 74% for stage 3, and 40% for stage 4. The overall 5-year survival rate for all stages is 74.1% (95%CI 0.68-0.79).

**Table 2 Five-year survival rates data (%) by stage of disease**

Stage	Number	Survival rate				
		1-year	2-year	3-year	4-year	5-year
1	128	100	98.2	98.2	94.5	87.6
2	180	100	91.5	85.4	76.0	70.9
3	188	97.2	89.4	83.1	78.8	74.3
4	34	72.7	40.5	40.5	40.5	40.5

In the univariable and multivariable analyses, we found that only two factors significantly affected the 5-year survival rate: histology and disease stage (Figure 1 and 2). Figure 2 presents a Kaplan-Meier analysis of the 5-year survival rate, adjusted for stage, age, underlying diseases, and waiting time. The results indicate that patients with stage 1 disease had the highest survival rates, those with stage 2 and 3 had comparable outcomes, while stage 4 patients exhibited the poorest survival. The median overall survival for stage 4 was 16.7 months.

Other comorbidities, such as diabetes mellitus (DM), hypertension (HT), and HIV infection, had no effect on survival rates. Additionally, the time to initiation of treatment after diagnosis also did not impact the survival rates of cervical cancer patients in this study. Using stage 1 as the reference group, the risks were 4.3 for stage II (95%CI: 1.8-10.4), 4.1 for stage III (95%CI: 1.7-10.0), 36.2 for stage IV (95%CI: 14.0-94.0), and 0.5 for squamous cell carcinoma (95%CI: 0.3-0.8) (Table 3). This indicates that the risk of the disease increases with the progression of the disease stage, and the risk is higher in the group with histology classified as non-squamous cell.

**Table 3 Univariate and multivariate analysis of risk factors of survival rates cervical cancer**

Factors	Univariable analysis			Multivariable analysis		
	risk	95% CI	P value	risk	95% CI	P value
Stage						
1	Reference					
2	4.0	1.7–9.8	0.002	4.3	1.8–10.4	0.001
3	4.0	1.6–9.6	0.002	4.1	1.7–10.0	0.002
4	35.9	13.8–93.4	<0.001	36.2	14.0–94.0	<0.001
Age	1.0	0.9–1.02	0.786	1.0	0.9–1.0	0.915
HT	0.6	0.3–1.4	0.263	0.6	0.3–1.4	0.236
DM	0.4	0.1–2.0	0.276	0.4	0.1–2.0	0.290
HIV	1.2	0.4–3.9	0.734	1.3	0.4–4.1	0.687
Waiting time for treatment	1.0	0.9–1.0	0.120	1.0	0.6–1.6	0.992
Histologic type (SCC)	0.5	0.3–0.8	0.002	0.5	0.3–0.8	0.002

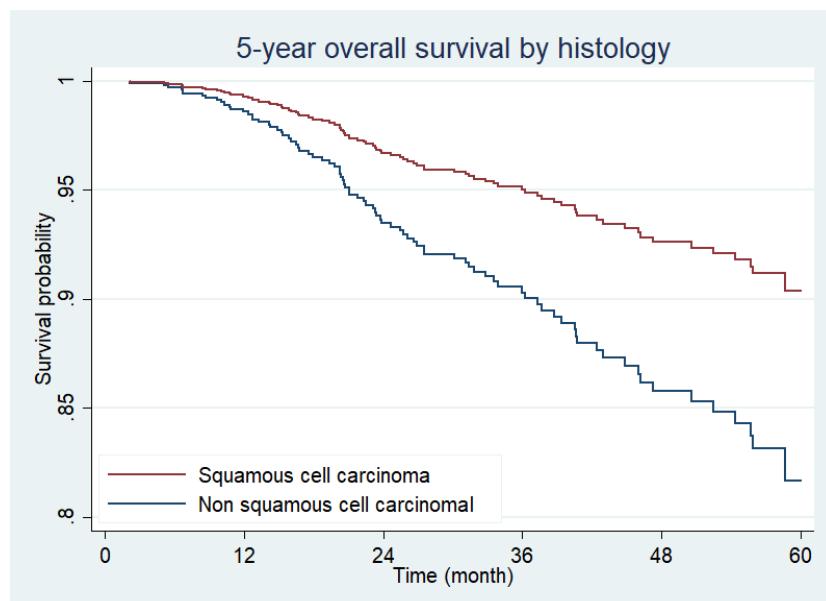


Figure 1. The overall 5-year survival rate by histology

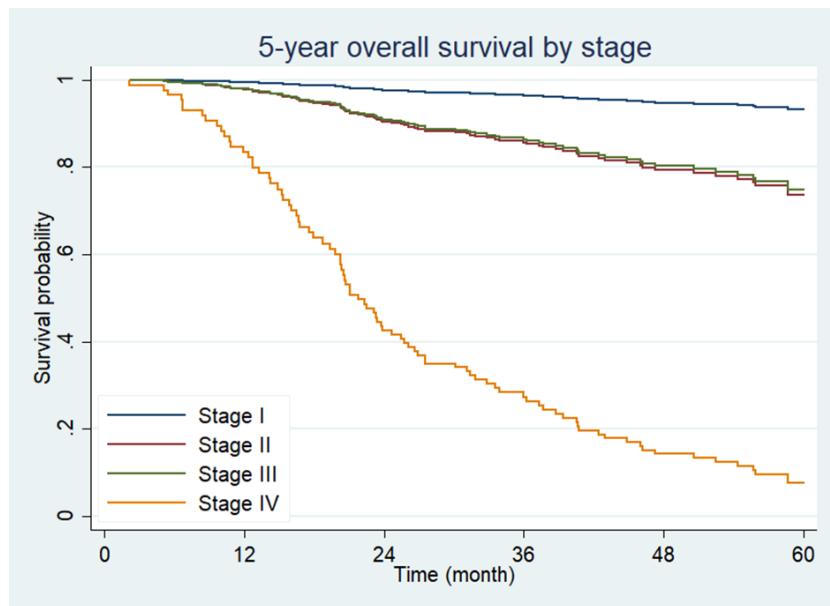


Figure 2. The overall 5-year survival rate by stage  
(After adjusted by stage, age, underlying disease, waiting time)

## Discussion

According to data from Globocan, the global incidence of cervical cancer indicates that the Asia region ranks third in incidence, following Africa and South America<sup>1</sup>. In Thailand, cervical cancer consistently ranks among the five most common cancers in women. The latest data from the National Cancer Institute in 2017 reported 5,422 new cases of cervical cancer, equating to 11.1 cases per 100,000, making it the fifth most common cancer among women in Thailand<sup>3</sup>. Within the National Cancer Institute, cervical cancer patients receiving treatment rank second after breast cancer, accounting for 13.1% of all female patients<sup>2</sup>.

This study aims to determine the 5-year survival rate of cervical cancer patients at the National Cancer Institute and to identify factors that may influence patient survival rates. By examining the 5-year survival rates of the disease, we aim to compare them with other hospitals in the country as well as the overall survival rates internationally, demonstrating that our treatment standards can be compared with institutions both domestically and abroad.

In addition to assessing survival rates, this study also seeks to explore other factors that may influence the survival rates of cervical cancer patients. We found that some patients had comorbidities such as diabetes and hypertension, with hypertension present in 17.2% of cases. However, this study determined that comorbidities such as diabetes and hypertension, as well as HIV, did not significantly affect survival rates.

Our study demonstrated that age is not an independent risk factor for survival, which differs from a previous study in Malaysia<sup>10</sup> and Bhutan<sup>11</sup> indicating that age under 45 is associated with better survival. A 2018 systematic review<sup>12</sup> reported findings consistent with ours. These differences may be influenced by the coverage rate of screening programs for early cancer detection and healthcare support systems, both of which are well-established in Thailand.

The median waiting time for treatment in our study is 59 days, shorter than the 138 days reported in a study from Brazil<sup>13</sup>. According to Thailand's National Health Service guidelines, patients diagnosed with cervical cancer should begin initial treatment within 28 days of diagnosis<sup>14</sup>. Although there is no strong evidence that a waiting period longer than 30 days negatively impacts survival, our findings suggest that treatment delays beyond national guidelines may be acceptable in hospital settings with certain limitations, without significantly affecting patient outcomes. However, an excessively long waiting time for treatment may lead to disease upstaging and result in a poorer prognosis. Further research on optimal waiting periods is recommended.

Our study shows that only disease stage and histology type impacted survival rates, with squamous cell carcinoma associated with significantly better survival compared to other types. Advanced disease stages were significantly linked to poorer survival rates. A recent study on cancer-specific survival in patients with stage IIIC1 cervical cancer also identified histology as an independent prognostic factor for overall survival<sup>15</sup>

A literature review indicates that the overall 5-year survival rates for cervical cancer in England<sup>15</sup> and the United States<sup>16</sup> are 74% and 67%, respectively. In contrast, the 5-year survival rates in Asian countries such as China, Japan, Malaysia, and India are 75%, 64%, 71% (2015), and 72.6% (2021), respectively<sup>7,8,18</sup>. In Thailand, the 5-year survival rate for cervical cancer at a tertiary referral hospital in Northeast Thailand is reported to be 49.3%<sup>19</sup>. Our study demonstrated an overall 5-year survival rate of 74.1% across all stages, comparable to rates in developed countries and higher than those in many developing countries. The FIGO staging system is commonly used to assess prognosis in cervical cancer patients, with the updated FIGO staging reflecting the significant impact of lymph node metastasis on prognosis<sup>20</sup>. However, survival rates can vary widely among patients at the same stage due many factors. The primary factors affecting survival rates include disease stage and histology, which align with findings from studies in various countries.

In conclusion, the overall 5-year survival rate of cervical cancer patients treated at the National Cancer Institute is favorable and comparable to those in developed countries and other regions in Asia. Although our data may not fully represent the national statistics, the significant impact of disease stage on survival rates suggests that continuous campaigns for screening to detect precancerous lesions and increase early-stage cancer diagnosis will greatly benefit treatment and survival outcomes.

## References

1. Chhikara BS, Parang K. Global Cancer Statistics 2022: the trends projection analysis. *Chem Biol Lett* [Internet]. 2023 Jan. 2 [cited 2025 Mar. 27];10(1):451. Available from: <https://pubs.thesciencein.org/journal/index.php/cbl/article/view/451>
2. Cancer in Thailand [Internet]. Nci.go.th. [cited 2022 Dec 12]. Available from: [https://www.nci.go.th/e\\_book/cit\\_x/index.html](https://www.nci.go.th/e_book/cit_x/index.html)
3. NCI 2021 [Internet]. Nci.go.th. [cited 2022 Nov 18]. Available from: [https://www.nci.go.th/e\\_book/hosbased\\_2564/index.html](https://www.nci.go.th/e_book/hosbased_2564/index.html).
4. Singh GK, Azuine RE, Siahpush M. Global inequalities in cervical cancer incidence and mortality are linked to deprivation, low socioeconomic status, and human development. *Int J MCH AIDS* [Internet]. 2012;1:17–30. Available from: <http://dx.doi.org/10.21106/ ijma.12>.
5. Cancer of the cervix uteri - cancer stat facts [Internet]. SEER. [cited 2022 Dec 12]. Available from: <https://seer.cancer.gov/statfacts/html/cervix.html>
6. Muhamad NA, Kamaluddin MA, Adon MY, Noh MA, Bakhtiar MF, Ibrahim Tamim NS, et al. Survival rates of cervical cancer patients in Malaysia. *Asian Pac J Cancer Prev* [Internet]. 2015;16:3067–72. Available from: <http://dx.doi.org/10.7314/apjcp.2015.16.7.3067>
7. Balasubramaniam G, Gaidhani RH, Khan A, Saoba S, Mahantshetty U, Maheshwari A. Survival rate of cervical cancer from a study conducted in India. *Indian J Med Sci* [Internet]. 2020;73:203–11. Available from: [http://dx.doi.org/10.25259/ijms\\_140\\_2020](http://dx.doi.org/10.25259/ijms_140_2020)
8. Bhatla N, Berek JS, Fredes C. Revised FIGO staging for carcinoma of the cervix uteri. *Int J Gynaecol Obstet* [Internet]. 2019;147:129–35. Available from: <http://dx.doi.org/10.1002/ijgo.12969>.

9. Bangsomboon P. Survival Rate of Cervical Cancer Patients According to the 2018 FIGO Staging System: A tertiary hospital based study, Vajira Hospital, Bangkok. 2022; Available from: <http://dx.doi.org/10.14456/TJOG.2022.8>
10. Muhamad NA, Kamaluddin MA, Adon MY, Noh MA, Bakhtiar MF, Ibrahim Tamim NS, et al. Survival rates of cervical cancer patients in Malaysia. *Asian Pac J Cancer Prev* [Internet]. 2015;16:3067–72. Available from: <http://dx.doi.org/10.7314/apjcp.2015.16.7.3067>
11. Tshewang U, Satiracoo P, Lenbury Y. Survival analysis of cervical cancer patients: A case study of Bhutan. *Asian Pac J Cancer Prev* [Internet]. 2021;22:2987–93. Available from: <http://dx.doi.org/10.31557/APJCP.2021.22.9.2987>
12. Shrestha AD, Neupane D, Vedsted P, Kallestrup P. Cervical Cancer prevalence, incidence and mortality in low and middle income countries: A systematic review. *Asian Pac J Cancer Prev* [Internet]. 2018;19:319–24. Available from: <http://dx.doi.org/10.22034/APJCP.2018.19.2.319>
13. Ferreira da Silva I, Ferreira da Silva I, Koifman RJ. Cervical cancer treatment delays and associated factors in a cohort of women from a developing country. *J Glob Oncol* [Internet]. 2019;5:1–11. Available from: <http://dx.doi.org/10.1200/JGO.18.00199>
14. National cancer institute. Service plan 2566-2570 [internet]. 2023 [cited 2024 October 1]. Available from: template service plan มะเร็ง ตัวชี้วัด 66-70 .pdf
15. Feng Y, Wang Y, Xie Y, Wu S, Li Y, Li M. Nomograms predicting the overall survival and cancer-specific survival of patients with stage IIIC1 cervical cancer. *BMC Cancer* [Internet]. 2021;21:450. Available from: <http://dx.doi.org/10.1186/s12885-021-08209-5>
16. Cancer survival in England. (n.d.). NHS England Digital. Retrieved October 17, 2024, from: <https://digital.nhs.uk/data-and-information/publications/statistical/cancer-survival-in-england>
17. Betts P, Mokry B, Risser D, Weiss N, Williams MA, Sjoberg E, et al. *Cancer Facts & Figures* 2004. 2004 [cited 2024 Oct 17]; Available from: <https://www.cancer.org/research/cancer-facts-statistics/all-cancer-facts-figures/2024-cancer-facts-figures.html>
18. Vali M, Maleki Z, Nikbakht H-A, Hassanipour S, Kouhi A, Nazemi S, et al. Survival rate of cervical cancer in Asian countries: a systematic review and meta-analysis. *BMC Womens Health* [Internet]. 2023;23. Available from: <http://dx.doi.org/10.1186/s12905-023-02829-8>

19. Wannasin R, Likitdee N, Kelly M, Thinkhamrop K. Survival after diagnosis of cervical cancer patients at a tertiary referral hospital in Northeast Thailand. *Asian Pac J Cancer Prev* [Internet]. 2023;24:1759–67. Available from: <http://dx.doi.org/10.31557/APJCP.2023.24.5.1759>
20. Salvo G, Odetto D, Pareja R, Frumovitz M, Ramirez PT. Revised 2018 International Federation of Gynecology and Obstetrics (FIGO) cervical cancer staging: A review of gaps and questions that remain. *Int J Gynecol Cancer* [Internet]. 2020;30:873–8. Available from: <http://dx.doi.org/10.1136/ijgc-2020-001257>