ORIGINAL ARTICLE

Accessibility to Palliative Care for Non-Cancer Patients Near the End of Life: The Obstacles and Opportunities

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Background: Understanding the prevalence and associated factors of accessibility to palliative care among non-cancer patients can promote the quality of life. However, data in this area of Thailand are limited.

Objective: To investigate the prevalence and associated factors of non-cancer patients' access to palliative treatment.

Materials and Methods: A cross-sectional study was performed by a retrospective medical chart review of non-cancer patients admitted and later pronounced dead at Panyananthaphikkhu Chonprathan Medical Center, Srinakharinwirot University, Thailand. The accessibility to the palliative care system was collected using the authors' modification of the Supportive and Palliative Care Indicators Tool (SPICT). All data were analyzed by using the chi-square test and the binary logistic regression model, respectively.

Results: The prevalence of accessibility to palliative care among non-cancer patients was 15.69%. Non-cancer patients with renal and liver failure were significantly associated with accessibility to palliative care (adjusted OR 4.742, p=0.002 and 6.159, p=0.011, respectively).

Conclusion: Prevalence of access to palliative care in non-cancer patients was 15.69%. Organ failure in non-cancer patients with renal and hepatic systems can boost accessibility to palliative treatment. There were few palliative patients without cancer that accessed palliative care service. Additionally, it is critical for healthcare professionals to be educated on the fundamentals of palliative care.

Keywords: Non-cancer patients; Prevalence; Accessibility; Palliative care

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Palliative care plays a significant role in improving the quality of life for patients and their families dealing with life-threatening illnesses and incurable conditions. Both cancer and non-cancer ailments have symptomatic and supportive treatments. Ideally, all patients should receive an ongoing, all-encompassing treatment(1). They should be evaluated for symptoms(2), mental status, their caregivers, and social aspects, including their advanced care plan. The objective care was to provide them with quality of life. Palliative care can also aid the healthcare system in reducing wasteful spending and admission rates(1).

According to the 2019 World Health Organization survey, only 14% of 40 million palliative patients had access to palliative care(3). Numerous nations, including Scotland, Germany, Canada, India, the United Kingdom, the United States of America, and Thailand(4), have conducted studies on palliative care accessibility. However, the research on palliative patients without cancer was scarce. Palliative patients without cancer are significant and distinct from those with cancer. The course of their sickness is a gradual decline with occasional exacerbating symptoms. Therefore, their palliative treatment is more complicated(5).

Over eight years ago, the Panyananthaphikkhu Chonprathan Medical Center, Srinakharinwirot University established a palliative care service. There were 301 palliative patients consulted in 2020, many had cancer.

There are currently a few studies in Thailand that have explored the prevalence and associated factors of accessibility to palliative care in non-cancer patients. The present study's primary goal was to determine how frequently non-cancer patients at

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Srinakharinwirot University's Panyananthaphikkhu Chonprathan Medical Center had access to palliative treatment. The investigation of the variables linked to non-cancer patients' access to palliative care was the secondary goal. The benefit would be the growth of the palliative care system and encouragement of healthcare practitioners to make palliative care accessible to the non-cancer patients.

Materials and Methods

A cross-sectional descriptive study approach was used for the present research. The present study received approval from the Panyananthaphikkhu Chonprathan Medical Center, Srinakharinwirot University Human Research Ethics Committee, project number EC 024/64. Retrospective analysis was conducted on the medical records from the Panyananthaphikkhu Chonprathan Medical Center's Hospital information system. Both inpatient and outpatient data were used.

Participants

The present study was conducted in 2022. The study was conducted on non-cancer inpatients that died at the Panyananthaphikkhu Chonprathan Medical Center Hospital, Srinakharinwirot University between January 1, 2020 and December 31, 2021. The sample size was calculated with Cochran's formula with a 95% confidence interval (CI)(6). In the present study, the proportion of the population was 10%(7). The experimental uncertainty was 5%. The authors considered that 10% could be at error due to data processing. Finally, the sample size was 153.

Those included in the present study were the patients diagnosed based on the Tenth revision of the International Classification of Disease and Related Health Problems (ICD-10) with non-communicable disease, according to Supportive and Palliative Care Indicators Tool (SPICT™) 2022(8), including disease of the nervous system (ICD-10: F03, G10-G99), disease of the circulatory system (ICD-10: I20-I99), disease of the respiratory system (ICD-10: J30-J99), disease of the urinary system as chronic kidney disease (ICD-10: N18-N19), and disease of the digestive system as liver cirrhosis (ICD-10: K70-K77).

The National Health Insurance Office's (NHSO) Handbook of Palliative and End-of-Life Care(1), along with findings from the studies(9) on palliative care service systems, were used as the sources for the six fundamental palliative care service requirements. 1) Patients were screened using the palliative performance scale (PPS). 2) Providing palliative care to the patients in a holistic medicine, including physical, mental, social, and spiritual aspects. 3) Providing advice on the care plan or create a formal advance care planning document in communication with the patients and their families. 4) Providing continuing care at home or follow-up at the palliative care clinic. 5) Providing support for home and community care including administration of medical supplies, services, and equipment for patients who received palliative care at home. 6) Providing family follow-up care or grief support after the death of the patient.

If the patient matched at least one of the SPICT™ 2022 criteria, palliative care should be provided. The palliative service should receive and consult the person's medical record as well as review the outpatient registers of palliative care clinics and the patient registry.

Patients whose in-patient electronic records could not be found or were incomplete were excluded. Patients who principally had cancer as a comorbidity were excluded. Patients who did not principally have a chronic non-communicable disease or a comorbidity were excluded. Finally, circular systematic sampling was conducted.

Instruments

The authors prepared the case record form as follows.

Part I: the demographic characteristics included gender, age at death, scheme, length of stay, access to palliative care within one year prior to death, and cause of death.

Part II: the palliative eligibility was assessed by using the SPICT™ 2022(8), which the authors modified by selecting six diseases, except cancer.

Statistical analysis

Statistical analysis was undertaken using Stata, version 13 (StataCorp LP, College Station, TX, USA) and Microsoft Excel. Descriptive statistical analysis was performed to characterize the demographic data. The authors described the categorical data with numbers and percentages. The continuous data were described with the mean and standard deviation if normal distribution, with the median and interquartile range if no normal distribution. Association between the variables of the participants and the accessibility to palliative care were analyzed using the chi-square test, Fisher's exact test, and binary logistic regression analysis. Statistical significance was considered at a p-value less than 0.05 unless otherwise specified.

Results

Characteristics of patients

The population included 2,570 people. Non-communicable disease was not the principal disease or comorbidity in 68 people, cancer was the principal disease or comorbidity in 420 people. There were also six people whose in-patient electronic data could not be partially or completely found. Finally, 2,076 people made up the present study population. Then circular systemic sampling was performed.

One hundred fifty-three medical charts of the patients were included in the present study. Seventy-nine were female (51.63%). The median age at death was 76 years old. There were 118 persons (77.12%) older than 60 years old. Most of these people used the Universal Coverage Scheme for 63 persons (41.18%) and Government Scheme for 60 persons (39.22%). All were Thai nationality. The median length of stay was nine days. One hundred thirty persons (84.97%) stayed less than or equal to 30 days. Infection was the cause of death, accounting for 83 participants (54.25%). One hundred twenty-four patients (81.05%) stayed in the internal medicine ward. The characteristics of the patients are shown in Table 1.

The accessibility rate to palliative care among non-cancer patients

Table 2 shows the number of non-cancer patients that had access to the palliative care system and the number of cases that were appropriate for palliative care according to using the modified SPICT. From this, 24 participants (15.69%) had access to the palliative care system. Prevalence of access to palliative care in non-cancer patients was 15.69% (95% CI 10.3 to 22.4). One hundred eleven participants (72.55%) screened with the SPICT were suitable for access to palliative care.

Factor associated with accessibility to palliative care among non-cancer patients

Compared with all participants, the factors associated with accessibility to the palliative care system included those who had renal disease (adjusted OR 4.742, 95% CI 1.772 to 12.693, p=0.002) and liver disease (adjusted OR 6.159, 95% CI 1.510 to 25.114, p=0.011). Associated factors of accessibility to palliative care in non-cancer patients in the Panyananthaphikkhu Chonprathan Medical Center Hospital, Srinakharinwirot University are presented in Table 3.

Table 1. Demographic data (n=153)

Demographic characteristic	n (%)
Sex	
Male	74 (48.37)
Female	79 (51.63)
Age at death (years)	
Median [Q1, Q3]	76 [62, 85]
Less than or equal to 60	35 (22.88)
More than 60	118 (77.12)
Scheme	
Universal Coverage Scheme	63 (41.18)
Social Security Scheme	5 (3.27)
Government Scheme	60 (39.22)
Others	25 (16.34)
Nationality	
Thai	153 (100)
Length of stay (days)	
Median, [Q1, Q3]	9 [4, 20]
Less than or equal to 30	130 (84.97)
More than 30	23 (15.03)
Cause of death	
Infection	83 (54.25)
Heart failure	23 (15.03)
Respiratory failure	9 (5.88)
Others	38 (24.84)
Ward	
Medicine	124 (81.05)
Surgery	26 (17.00)
Pediatrics	1 (0.65)
Orthopedics	1 (0.65)
Obstetrics and gynecology	1 (0.65)

Table 2. The number of non-cancer patients who accessed the palliative care system and the number of cases that was appropriate for palliative care (according to/using modified SPICT) (n=153)

Non-cancer patients who had access to the palliative care system (persons)	Patients who were screened with the SPICT (persons); n (%)		
	Appropriated	Non-appropriated	Total
Access	23 (15.03)	1 (0.65)	24 (15.69)
Non-access	88 (57.52)	41 (26.80)	129 (84.31)
Total	111 (72.55)	42 (27.45)	153 (100)

SPICT=Supportive and Palliative Care Indicators Tool

Kappa coefficient=0.112

Discussion

One hundred fifty-three charts of non-cancer patients who passed away between January 1, 2020 and December 31, 2021 were retrospectively reviewed. It was found that, of the patients who had access to

Table 3. Associated factors of accessibility to palliative care in non-cancer patients in the Panyananthaphikkhu Chonprathan Medical Center, Srinakharinwirot University (n=153)

Demographic data	Access to palliative care service					
	Number (persons)		Crude odd ratio (95% CI)*	p-value*	Adjusted odd ratio (95% CI)**	p-value**
	Access	Non-access				
Sex						
Female	14	65	1.378 (0.571 to 3.329)	0.476		
Male	10	64	1 (reference)			
Age at death (years)						
Less than or equal to 60	8	27	1 (reference)	0.189		
More than 60	16	102	0.529 (0.205 to 1.367)			
Scheme						
Universal coverage scheme	11	52	1 (reference)			
Social security scheme	2	3	3.151 (0.470 to 21.150)	0.237		
Government scheme	10	50	0.945 (0.369 to 2.421)	0.907		
Others	1	24	0.197 (0.024 to 1.614)	0.130		
Length of stay (days)						
Less than or equal to 30	21	109	1 (reference)	0.706		
More than 30	3	20	0.779 (0.212 to 2.858)			
Cause of death						
Infection	6	77	1 (reference)			
Hearth failure	3	20	1.925 (0.442 to 8.377)	0.383		
Respiratory failure	3	6	6.417 (1.275 to 32.289)	0.024		
Others	12	26	5.923 (2.019 to 17.373)	0.001		
Ward						
Internal Medicine	21	103	1 (reference)			
Surgery	3	23	0.717 (0.213 to 2.417)	0.592		
Others	0	3	0.688 (0.034 to 13.804)	0.807		
SPICT						
Dementia or frailty						
• Yes	7	34	1.151 (0.439 to 3.015)	0.775		
• No	17	95	1 (reference)			
Neurological disease						
• Yes	2	21	0.468 (0.102 to 2.140)	0.327		
• No	22	108	1 (reference)			
Heart and vascular disease						
• Yes	0	7	0.333 (0.018 to 6.030)	0.457		
• No	24	122	1 (reference)			
Respiratory disease						
• Yes	2	2	5.773 (0.772 to 43.150)	0.088		
• No	22	127	1 (reference)			
Kidney disease						
• Yes	11	25	3.520 (1.411 to 8.779)	0.007	4.742 (1.772 to 12.693)	0.002
• No	13	104	1 (reference)		1 (reference)	
Liver disease						
• Yes	4	7	3.486 (0.935 to 13.001)	0.063	6.159 (1.510 to 25.114)	0.011
• No	20	122	1 (reference)		1 (reference)	

SPICT=Supportive and Palliative Care Indicators Tool; CI=confidence interval

* Univariate analysis was used with the chi-square test, ** Multivariate analysis was used with binary logistic regression analysis

Adjusted by age at death, dementia or fragile, neurological disease, respiratory disease, kidney disease and liver disease palliative treatment, 15.69% were non-cancer patients at Panyananthaphikkhu Chonprathan Medical Center Hospital, Srinakharinwirot University.

According to a survey conducted by the Comprehensive Palliative Treatment Center at the Department of Family Medicine at Chiang Mai University, of the patients who received palliative care in 2021, 13.9% of those patients did not have cancer. The present study found a higher prevalence than the finding published by Prasad et al.(7) in 2017 and Hess et al.(10) in 2014 in which the prevalence was 10% and 8.1%, respectively. The patients had multiple comorbidities, which do occur not only in the group of non-cancer, but also in cancer, due to the limitation of the 2014 study to divide the patients in terms of a strong segregation between cancer and non-cancer group. Only patients with cardiac, renal, and neurological disease were evaluated among the participants in 2017. Hence, the prevalence was higher than in the two earlier studies. The present study showed that palliative care is a challenge, especially for non-cancer patients. If using the SPICT in medical practice, patients would receive more access to palliative care service. Moreover, understanding of palliative care needs is important to healthcare providers(7,10,11).

The present study showed that the accessibility rate to palliative care among non-cancer patients was 15.69%. Agreement between non-cancer patients who accessed the palliative care system and number of patients who were screened with the SPICT was slight (Kappa coefficient 0.112).

The present study showed the patients with renal disease were significantly associated with accessibility to the palliative care system (adjusted OR 4.742, 95% CI 1.772 to 12.693, p=0.002). These findings were consistent with the previous studies. In 2017, a previous study published by Prasad et al., showed that 38.46% of the patients with renal disease required palliative care service(7). In 2019, a survey by the World Health Organization showed that there were patients with chronic kidney disease that had access to a palliative care service(3). This was because the elderly with chronic kidney disease frequently refused renal replacement treatment due to degenerative change or multiple comorbidities. Palliative care is preferred than curative care by patients to improve their quality of life when symptoms and suffering worsen(12,13).

In 2011, a study published by Murtagh et al.(13) about palliative care with no dialysis option explained that the physicians made the decision to opt for no-dialysis or conservative treatment to elderly with chronic kidney disease, especially those older than 75 years, due to the constant gradual downward trajectory of their disease for about six months. On the contrary, with dialysis, there was a gradual trajectory up until death. In addition, in 2016, a study published by Tonsawan et al.(14) about renal palliative care concluded that advanced care planning should involve the patients, their families, and healthcare professionals in the treatment decision-making process for chronic renal disease. As a result, there are factors to consider such as age, functional abilities, and comorbidities. Therefore, palliative care is a suitable choice that can improve their quality of life and needs to be more affordable(13). The present study was limited about barrier-of-entry in the patients with renal disease to access to palliative care service.

The present study showed that the patients with liver disease were significantly associated with accessibility to the palliative care system (adjusted OR 6.159, 95% CI 1.510 to 25.114, p=0.011). These findings were consistent with the previous studies. From the instruction manual for healthcare providers regarding treating palliative care patients(10), it states that chronic liver disease is a life-threatening condition that has an equivocal trajectory, making the prognosis difficult to predict. The liver is gradually destroyed, substituted with fibrosis and functional decline. However, the early stages were symptom-free. Yet, later on, there were 5% to 7% with complications, including infections with mortality rates exceeding four times the normal level, and 30% of the deaths occurred within the first month. Therefore, doctors favor palliative care.

A study published by Mazzarelli et al. in 2018 explained that the integration of palliative care into the management of patients with end-stage liver disease (ESLD) has evidence-based analysis of the benefits(15).

On the contrary, in 2019, a study published by Ufere et al., using a questionnaire with hepatologists and gastroenterologists, stated that the barriers to access palliative care were the cultural misperceptions in palliative care, inadequate communication, and unrealistic expectations from the patients and their family about their prognosis(16).

The present study showed that the patients with respiratory disease were not significantly associated with accessibility to the palliative care system. These findings were contrary with previous studies. In 2019, a survey by the World Health Organization(3) found that 10.3% of respiratory-disease patients had access to the palliative care system. From the instruction manual for healthcare providers regarding treating palliative care patients(17), it states that the patients with advanced stage of chronic obstructive pulmonary disease (COPD) have physical and mental changes. They have an increase in dyspnea, a persistent cough, restlessness, restrictions on daily living activities, and hospital readmission. These symptoms have an effect on the functional capacity and quality of life of the patients and their caregivers. Prevention of aggravation and enhancement of life quality are the objectives of treatment. Therefore, palliative care is preferred by healthcare professionals. In addition, in 2021, a study published by Vetcharatpimol et al.(18) revealed that more than 60% of the patients and their caregivers preferred to learn about palliative care.

In 2004, in a study published by Celli and MacNee, only 7.8% of the patients with COPD accessed palliative care. A factor associated with access to palliative care was lung cancer. Barriers of providing palliative care in these patients are uncertainty in prognosis and lack of knowledge about palliative care. Inadequate resources for supporting end-of-life care are not offered, which contributes to unnecessary admissions(19).

The patients with dementia or neurological disease have a degenerative disease and cognitive impairment. It is a barrier for health care providers to assess and decide palliative care needs(20).

In 2017, a study published by Prasad et al., stated that due to the low burden of cardiac disease, which only affects postintervention patients, and the lack of hospital beds for these patients, only 7% of patients with cardiovascular disease were registered for palliative care(7). They distinguish themselves apart from patients with liver, renal, and respiratory diseases.

The results of the present study are constrained by at least three factors. It was a retrospective study, so some variables were not available. According to the exclusion criteria, some participants were removed from the study. These groups may be the patients who had access to palliative care but were not recorded. Thus, the present study increases awareness of the need to build a fully electronic medical record as a tool for inter-disciplinary team collaboration. In the future, a palliative-care registration system should be established. According to this limitation, the authors advise considering prospective research in the future to fill in the gaps of data. Secondly, the group of patients with hepatic and respiratory diseases had a wide range of 95% CI, per the statistical analysis. This was due to the fact that there were not many patients at that time because the hospital lacked a respiratory and liver disease specialist. Future research on the two groups' access to palliative care is something the authors advise taking into consideration. As a suggestion, the authors advise dividing into equal groups of the non-cancer patients in the future research.

Some patients with non-cancer had sudden or unexpected death, thus another limitation in the present study.

Conclusion

The prevalence of access to palliative care in non-cancer patients in the present study was 15.69%. Organ failure in non-cancer patients with renal, and hepatic systems can boost accessibility to palliative treatment. There were a few palliative patients without cancer accessing the palliative care service. Additionally, it is critical for healthcare professionals to be educated on the fundamentals of palliative care.

What is already known on this topic?

Non-cancer patients are valuable and distinct from those cancer patients. Their palliative treatment is more challenging. However, there was limited data about factors associated with accessibility to palliative care among non-cancer patients.

What this study adds?

The findings demonstrate the prevalence of accessibility to palliative care among non-cancer patients as well as significantly associated factors, including organ failure with the renal, and hepatic systems. It is recommended that physicians raise their awareness of the use of the SPICT in clinical practice.

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Authors' contributions

PR, CW, and NR contributed to the conceptual design of the study. PR contributed to all conduction of study and data collection. PR contributed to the interpretation and analyzation of data. PR, CW, and NR contributed to write-up. PR contributed as a first author and a corresponding author of the present study. All authors reviewed and agreed with the content of this original article.

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Conflicts of interest

The authors declare no conflict of interest.

References

1. Nagaviroj K. Manual for palliative care in patients and family: Thai Palliative Care Society. Khon Kaen: Beyond Enterprise; 2016.
2. Ostgathe C, Alt-Epping B, Golla H, Gaertner J, Lindena G, Radbruch L, et al. Non-cancer patients in specialized palliative care in Germany: what are the problems? Palliat Med 2011;25:148-52.
3. World Health Organization. Terminal patient with palliative care [Internet]. 2019 [cited 2021 Nov 25]. Available from: http://www.hfocus.org/content/2019/05/17152.
4. Fumaneeshoat O, Ingviya T, Sripaew S. Prevalence of cancer patients requiring palliative care in outpatient clinics in a tertiary hospital in Southern Thailand. J Health Sci Med Res JHSMR. 2021;39:411-21.
5. Palliative Care Network of Wisconsin. Illness trajectories: description and clinical use [Internet]. 2016 [cited 2022 Aug 8]. Available from: www.mypcnow.org/fast-fact/illness-trajectories-description-and-clinical-use/.
6. Kongsomboon K. Textbook of epidemiological research for medical students. 2nd Edition. Bangkok: Chulalongkorn University Printing House; 2019.
7. Prasad P, Sarkar S, Dubashi B, Adinarayanan S. Estimation of need for palliative care among noncancer patients attending a tertiary care hospital. Indian J Palliat Care 2017;23:403-8.
8. Boyd K. SPICT™ Supportive and Palliative Care Indicators Tool: SPICT [Internet]. 2019 [cited 2021 Dec 1]. Available from: https://www.spict.org.uk/.
9. Junda T, Phengjard J, Sumdangrit B, Patumwan A, Chaiviboontham S, Intarasombat P, et al. Palliative care system: central region of Thailand. Thai Red Cross Nurs J 2017;10:87-102.
10. Hess S, Stiel S, Hofmann S, Klein C, Lindena G, Ostgathe C. Trends in specialized palliative care for non-cancer patients in Germany--data from the national hospice and palliative care evaluation (HOPE). Eur J Intern Med 2014;25:187-92.
11. Maeroh N, Kongsuwan W, Yodchai K. Barriers in providing palliative care in intensive care units: Nurses' experiences. Songklanagarind J Nurs 2017;37:74-82.
12. Sanun-aur P, Piyawattanapong S. The needs in palliative care for older people with end-stage renal disease from the nurse's perspective [Internet]. 2022 [cited 2023 Mar 27]. Available from: https://app.gs.kku.ac.th/gs/th/publicationfile/item/23rd-grc-2022/MMP13/MMP13.pdf.
13. Murtagh FE, Cohen LM, Germain MJ. The "no dialysis" option. Adv Chronic Kidney Dis 2011;18:443-9.
14. Tonsawan P, Suriwong T. Renal palliative care: a new option for ESRD patients. Srinagarind Med J 2016;31:6-17.
15. Mazzarelli C, Prentice WM, Heneghan MA, Belli LS, Agarwal K, Cannon MD. Palliative care in end-stage liver disease: Time to do better? Liver Transpl 2018;24:961-8.
16. Ufere NN, Donlan J, Waldman L, Dienstag JL, Friedman LS, Corey KE, et al. Barriers to use of palliative care and advance care planning discussions for patients with end-stage liver disease. Clin Gastroenterol Hepatol 2019;17:2592-9.
17. Department of Medical Services Ministry of Public Health. The manual using for palliative care patients in healthcare provider. Nonthaburi: The Printing Office Agency the War Veterans Relief Organization of Thailand Under Royal Patronage His Majesty the King; 2021.
18. Vetcharatpimol K, Srivorakul W, Tacho P, Chumtem S, Kumkoom I. The perception of needs in chronic obstructive pulmonary disease: COPD patients and caregivers for palliative care: Phenomenological study. J Health Health Manag 2021;7:49-59.
19. Celli BR, MacNee W. Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper. Eur Respir J 2004;23:932-46.
20. Panuthai S. Palliative care nursing for older persons. Nurs J 2020;47:454-66.