

# Missed Opportunity to Diagnose Palliative Care Need Among Older Emergency Department Patients in a Middle-Income Country: A Retrospective Study

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**Purpose:** This study aimed to determine the percentage of missed opportunities (MOs) to identify and treat older adults presenting with palliative care (PC) needs at one emergency department (ED). The secondary objective was to determine the rate of treatment interventions regardless of whether the patients received a PC plan as well as the direct cost of treatment.

**Patients and Methods:** In this retrospective study, PC need was determined using broad and narrow criteria. The subjects comprised patients aged 65 or older who had out-of-hospital cardiac arrest and/or died in the ED (Group 1) or within 72 hours after ED disposition (Group 2) over a 3-year period (2016–2018). Overall, 17,414 older adults visited the ED, 60 died in the ED, and 400 died within 72 hours after ED disposition and admitted to in-hospital ward. In total, 200 patients were randomly selected; of these, 15 were excluded.

**Results:** Of the remaining 185 patients enrolled, 161/185 (87%) met the PC criteria and 60/161 (37.3%) were missed opportunities for PC planning. Group 1, had thirty patients, and 8 of those 30 (27%) were missed opportunities for PC planning. Group 2, 131/161 (81.4%), died within 72 hours, and there were 52 missed opportunities (39.7%) of ED PC planning. By comorbidity (Group 2), providers considered PC planning most often for cancer patients (PC: 41.8%; missed opportunities: 15.4%;  $p = 0.001$ ) and there were more missed opportunities for PC planning among those with ischemic heart disease (PC: 19.0%; missed opportunities: 36.5%;  $p = 0.025$ ).

**Conclusion:** Of the older adults who visited the ED, 87% merited palliative care; further, 37% of opportunities for PC planning were missed. Providers considered PC planning most often for cancer patients. Recognizing PC needs and initiating care in the ED can improve end-of-life quality for dying patients.

**Keywords:** elderly patients, emergency department, palliative care

## Introduction

Since 2007, the World Health Organization has supported the notion of palliative care (PC), which is a holistic approach to medicine aimed at reducing pain and enhancing quality of life for those with life-limiting illnesses.<sup>1</sup> Hospital emergency departments (EDs) are frequently the first and, at times, the last place that critically ill older adults visit, which frequently includes an increasing need for medical interventions at the end of life.<sup>2,3</sup> A missed opportunity to diagnose palliative care need which defined of an opportunity to diagnose individuals who met the Broad and Narrow criteria or other requirements for obtaining palliative care but were not given. When the diseases progressed to advanced stages, the patients' quality of life declined and their endorsement of pain increased comparatively. This could be due to the need for palliative interventions to meet all of the patients' needs, including social support and spiritual care in the ED, as well as the increased burden of physical and psychological symptoms. In one study, a third of critically ill older

adults were intubated and mechanically ventilated;<sup>4</sup> in another, 35% of intubated older ED patients died after 2 or 3 days, with higher rates among patients with sepsis, myocardial infarction, and cerebrovascular disease.<sup>5</sup> Further, a study in the United States showed that half the patients with active cancer who visited the ED had unmet PC needs.<sup>6</sup> According to one study of 18 EDs (the Comprehensive Oncologic Emergencies Research Network (CONCERN)) in the US, a small percentage of patients with advanced cancer were receiving hospice care (1.3%) and palliative care (6.5%).<sup>7</sup> Moreover, in a study in the Netherlands, 33% of solid tumor patients who had been admitted to the ED had discussed limited life-sustaining treatment; this rate increased to 70% during or after the ED visits.<sup>8</sup> Based on such research findings,<sup>9,10</sup> emergency medicine professional societies reached a consensus on the need to increase PC research and treatment, and the American Board of Internal Medicine recommended that ED patients who would likely benefit from PC care and hospice services receive such services in a timely manner.<sup>11</sup> In addition, one study<sup>12</sup> showed that at the end of life, patients needed freedom from pain, shortness of breath, and anxiety.

Thailand is an Asian country where the culture and environment differ from the Western countries mentioned above. The Thai Palliative Care Society and Thai Palliative Care Nurses Society were established in 2012,<sup>13</sup> and in a national survey of government hospitals, 59% trained their medical personnel for PC.<sup>14</sup> In Thailand, a small number of hospitals introduced ED palliative care.<sup>15–17</sup> The concept of emergency PC started a short time later in 2016, but there is a gap in the information on how well emergency physicians (EPs) perform PC or end-of-life care in the ED. However, there was no official government policy dictating the palliative ED standard of care. The primary objective was to determine the percentage of missed opportunities to identify PC needs in older ED patients. The secondary objective was to determine the rate of treatment interventions regardless of whether the patients received a PC plan as well as the direct cost of treatment.

## Materials and Methods

### Setting and Study Design

This investigation comprised a retrospective descriptive study at an urban government teaching hospital in central Bangkok, Thailand. Our hospital had approximately 60,000 ED visits from January 2016 to December 2018; for the study, we enrolled patients aged 65 years and older who visited the ED during the aforementioned period. Since 2016, a PC consultation team has been available in our hospital. Our inclusion criteria were as follows: patients who had a medical record history of chronic disease treatment at our hospital at least 3 months prior to visiting the ED and had died in the ED or within 72 hours after ED disposition to in-hospital ward; we excluded patients who died from a trauma or drug overdose and patients with incomplete medical records. The present study was approved by the Vajira Institutional Review Board and all the methods were performed in accordance with the Declaration of Helsinki guideline. The COA number is 12/2562. The patient consent to review their medical records was not required by the Vajira Institutional Review Board. Due to the retrospective nature of data, the patient's consent to review their medical record was not required. Data were kept in an encrypted computer program.

### Data Collection Process

Study data were collected into a standard form, and the chart review was performed by two emergency medicine residents. Two emergency medicine residents separately, randomly sampled 5% (10/185) records and checked them to standardize data extraction with the study principal investigator (JS), a geriatric emergency physician.

The charts were examined specifically to determine whether both reviewers agreed that the patient needed PC. The data collected from the patients' emergency, hospital, and PC medical records comprised the following: date of ED visit, mode of transportation to the hospital, emergency severity index, chief complaint, baseline demographic data, Charlson comorbidity index (CCI),<sup>18</sup> history of PC plan before ED admission, PC need according to broad and narrow criteria,<sup>19</sup> number of previous hospital admissions in the past six months, reason for admission, intervention during admission, cardiopulmonary resuscitation (CPR) performed, and final diagnosis.

The patients who had medical history and clinical symptoms compatible with the broad and narrow criteria were reviewed. For any contradictions between the two physicians, the PI, with more than 10 years of ED experience with older adults, reviewed the data to make the final determination.

In total, 17,414 older adults visited our ED, 60 of whom died in the department, while 400 patients died in the hospital within 72 hours after being admitted to the ED. Based on the study by Beynon et al, which reported a 14% initiation rate of palliative care (PC) among older emergency department patients. Given the 95% confidence level (corresponding to  $Z = 1.96$ ) and a desired margin of error (E) of 5% (0.05), we used the formula for sample size estimation for proportions. Therefore, the approximately 191 individuals would require in our study. Using a web-based random generator, we randomly selected 200 patients; we excluded 15 patients, 2 of whom had severe trauma, and 13 of whom lacked health records at our hospital. Of the 185 patients enrolled in the study, 161 (87%) met our PC criteria (Figure 1).

Following a random selection of 185 patients, we categorized them into two groups. Group 1 included patients who had out-of-hospital cardiac arrest and/or died in the ED. In this group, we identified a missed opportunity when the medical records indicated that a patient with a known PC need had not had the need addressed in the past 3 months before the date of ED visited.

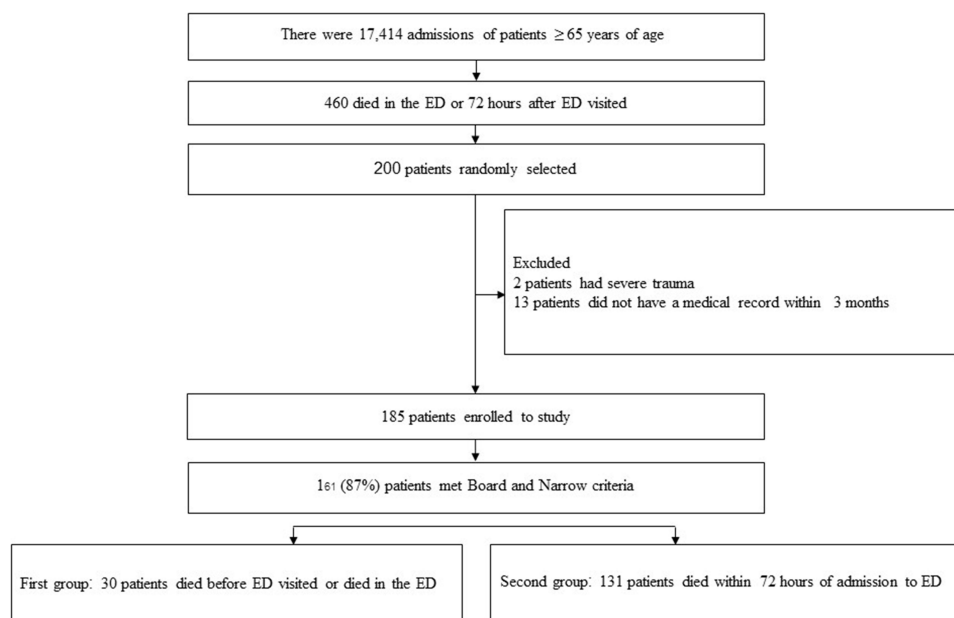
Group 2 comprised patients who died within 72 hours after disposition from ED and admitted to in-hospital ward. In this group, a missed opportunity was noted when a patient with a known PC need did not have this need recorded in the ED medical record. For example, if the ED physician or team discussed a PC plan, regardless of whether the patient or a surrogate accepted the service, we counted the patient as having an ED PC care plan.

The rationale behind splitting the group into two is that emergency medicine physicians in group 1 have little to no time to explain palliative care. This is mostly rely on earlier preparation.

## Definitions

First of all, we classified a missed opportunity as one that resulted from failing to diagnose a PC need in the ED. To determine PC need, we followed Beynon et al's criteria;<sup>19</sup> specifically, we used both broad and narrow criteria. In particular, we identified patients who met the broad and narrow criteria as potentially having PC needs (Table 1)

The broad criteria were to meet either the Charlson Comorbidity Index  $>2$  or any of the diseases listed in Table 1, in addition to symptoms (pain, breathlessness, nausea, weight loss, confusion, and/or anxiety) and/or complex social needs of narrow criteria. Special PC included care for basic disease, physical symptoms, and social needs. The CCI predicts



**Figure 1** Enrollment of the subjects.

**Table 1** Broad and Narrow Criteria

Broad	Narrow
Cancer	Symptom: pain, breathlessness, nausea, weight loss, confusion, and/or anxiety) and/or complex social needs
Obstructive pulmonary disease	
Congestive heart failure	
Renal failure	
Liver failure	
Neurological disease (Parkinson's disease, multiple sclerosis, dementia, or motor neuron diseases)	
Charlson Comorbidity Index > 2	

one-year mortality rates based on a range of comorbidities as follows: a score 0 = 12% mortality rate at one year, 1–2 = 26% mortality, 3–4 = 52% mortality, and 5 = 85% mortality.

## Treatment Intervention

To begin with, we counted any procedure that patients received in the ED until they died, including intravenous catheterization, retained Foley catheter, endotracheal (ET) tube intubation, intercostal drainage, central venous catheterization, dialysis, cardiac catheterization, and extracorporeal membrane oxygenation. Further, we defined pain relief as the administration of opioids by any route during an ED stay and in-hospital stay. Finally, we included drug, laboratory, and medical equipment costs as the direct medical costs; we did not include manpower and total bed-day costs.

## Statistical Analysis

Using STATA version 15.1, we analyzed the data; we present the results as percentage and p values for the categorical data and mean (standard deviation; SD) or median (interquartile range) for the continuous data where appropriate. Following the test for data distribution using the Shapiro–Wilk test. Further, we compared the categorical data using the chi-squared or Fisher's exact test. For the continuous data, we applied the *t*-test for normal distribution or Wilcoxon rank sum test for non-normal distribution.

## Results

### Baseline Characteristics

Of the 185 patients enrolled in the study, 161 (87%) met our PC criteria (Figure 1). Group 1 comprised 30 patients (18.6%), all of whom died in the ED or before their arrival to the ED; among them, 8 cases comprised missed opportunities (27%). Table 2 presents the demographic data; their mean age was 78.8 (SD: 9.3) years. In Group 2, which included 131 patients (81.4%) who died within 72 hours after disposition from the ED and to in-hospital ward, 52 cases were missed opportunities for offering PC in the department (39.7%). The mean age of Group 2 was 81.3 (SD 8.7) years; two-thirds of the patients (79 [60.3%]) were married. In Group 2, there were fewer Emergency Department (ED) visits among missed opportunity group, as 42 out of 52 (80.8%) patients visited the ED 1–2 times within 6 months. In contrast, in the palliative care (PC) group, 45 out of 79 (57%) patients visited the ED 1–2 times within the same period. Furthermore, in the missed opportunity group, 10 out of 52 (19.2%) patients visited the ED more than or equal to 3 times, whereas in the PC group, 34 out of 79 (43%) patients had visited the ED more than or equal to 3 times. Group 2 that had received PC had more bedridden patients than the missed opportunity group (PC: 79.8%, missed opportunities: 57.7%;  $p = 0.013$ ), and their CCIs were higher (PC: mean CCI = 7.9 [SD: 2.7], missed opportunities: mean CCI = 6.9 [SD: 2.2];  $p = 0.029$ ). By comorbidity, Group 2 (23/131 [17.6%]) had a higher percentage of individuals with COPD compared to Group 1 (2/30 [6.7%]). Group 2 also had a higher prevalence of CHF (20/131 patients [15.27%]), and IHD (34/131 patients [25.95%]) compared to Group 1 (CHF 1/30 patients [3.3%], IHD 5/30 patients [16.7%]). There were more

**Table 2** Baseline Characteristics

	Group 1, N=30(%)			Group 2, N=131(%)		
	Had Palliative Care Plan Before, n=22 (73%)	Missed Opportunity for Palliative Care Plan Before, n=8 (27%)	p -value	Had Palliative Care Plan in the ED. n=79 (60.3%)	Missed Opportunity for Palliative care Plan in the ED n=52(39.7%)	p -value
<b>Gender, Female</b>	9(40.9)	4(50.0)	0.698	38(48.1)	28(53.9)	0.520
Age (year), mean (SD)	79.0(9.4)	78.0(9.6)	0.796	80.5(9.0)	82.6(8.1)	0.181
<b>Marital status</b>			0.829			0.465
Married	9 (40.9)	5(62.5)		49(62.0)	30(57.7)	
Single	11(50.0)	3(37.5)		17(21.5)	9(17.3)	
Widow	2(9.1)	0		13(16.5)	13(25.0)	
<b>Number of hospital visits within 6 months (unscheduled)</b>						0.019
1–2 times	8(36.4)	3(37.5)		45(57.0)	42(80.8)	
3–4 times	5(22.7)	1(12.5)		25(31.6)	7(13.4)	
> 4 times	9(40.9)	4(50.0)		9(11.4)	3(5.8)	
<b>Functional status</b>			0.518			0.013
Walk with no help	6(27.3)	3(37.5)		8(10.1)	7(13.5)	
Walk with help	5(22.7)	3(37.5)		8(10.1)	15(28.9)	
Bed ridden	11(50.0)	2(25.0)		63(79.8)	30(57.7)	
<b>Living with relative at home</b>	22(100.0)	8(100.0)		71(89.9)	48(92.3)	0.763
Nursing home				8(10.1)	4(7.7)	
<b>Mode of arrival</b>			0.195			0.173
Ambulance	5(22.7)	4(50.0)		32(40.5)	15(28.9)	
No ambulance						
<b>Underlying diseases</b>						
Diabetes mellitus with complications	10(45.5)	5(62.5)	0.682	22(27.9)	22(42.3)	0.086
Stroke	6(7.3)	3(37.5)	0.666	30(38.0)	17(32.7)	0.537
Cancer	7(31.8)	2(25.0)		33(41.8)	8(15.4)	0.001
Hypertension	15(68.2)	8(100.0)	0.143	58(73.4)	47(90.4)	0.017
COPD	1(4.6)	1(12.5)	0.469	12(15.2)	11(21.2)	0.380
IHD	4(18.2)	1(12.5)		15(19.0)	19(36.5)	0.025
CHF	1(4.6)	0		9(11.4)	11(21.2)	0.129
<b>Charlson comorbidity index, mean (SD)</b>	7.6(2.0)	6.8(3.5)	0.806	7.9(2.7)	6.9(2.2)	0.029
<b>ED length of stay, median (IQR)</b>	187(64, 247)	253(186,479)	0.133	240(180,394)	284(204,335)	0.209

**Abbreviations:** ED, emergency department; SD, Standard Deviation; IQR, Interquartile Range.

missed opportunities for those with ischemic heart disease (IHD; PC: 19.0%; missed opportunities: 36.5%;  $p = 0.025$ ), and there were less missed opportunities for cancer patients (PC: 15.4%; missed opportunities: 41.8%;  $p = 0.001$ ).

## Chief Complaints and Diagnoses

Table 3 presents the patients' chief complaints and diagnoses; the alteration of consciousness was the most common chief complaint for both groups, followed by dyspnea and a sudden loss of consciousness. IHD was the most common cause of death in Group 1; the most common cause of death for Group 2 was pneumonia. There were no differences between the rate of PC and missed opportunities for PC in terms of chief complaints or final diagnoses.

## Treatment Received During Hospital Visits and Patient's Direct Medical Cost

Table 4 presents the treatments that Group 2 received during their hospital visits. The rate of endotracheal tube intubation (ETT) in the missed opportunity group was higher than that in the group that received PC in the department (missed opportunities: 71.2%, PC: 43.0%;  $p = 0.002$ ). The rate of CPR was also higher in the missed opportunity group than in the PC group (missed opportunities: 38.5%, PC: 17.7%;  $p = 0.008$ ).

In addition, we compared the patients' direct medical costs not including manpower, and the median costs were higher for the missed opportunities patient cases than for patients who received PC in both group; the Group 1 (PC: 6603 [5358, 9607] Thai baht; missed opportunities: 11,346 [8506, 14,724] Thai baht;  $p < 0.001$ ) and the Group 2- (PC: 15,391 [10,344, 25,036] Thai baht; missed opportunities: 26,038 [19,062, 36,674] Thai baht;  $p < 0.001$ ).

## Discussion

Our research revealed that 87% of elderly individuals admitted to the Emergency Department (ED) and passing away within 72 hours necessitated a Palliative Care (PC) plan. Among them, one-third had previously missed opportunities for PC before ED admission (Group 1), while 39.7% missed such opportunities within the ED setting (Group 2). However, the rate of missed opportunities for limited life-sustaining treatment and PC prior to ED admission (27%) less than the rate observed in a study from the Netherlands involving cancer patients (62.4%). The study indicated that prior to the ED visit, discussions regarding limitations on life-sustaining treatments occurred in 33.8% of cases, while during or after the

**Table 3** Chief Complaints and Diagnosis

	Group 1, N=30 (%)			Group 2, N=131 (%)		
	Had palliative care plan before n=22 (73%)	Missed opportunity for palliative care plan before n=8 (27%)	P-value	Had palliative care plan in the ED.n=79 (60.3%)	Missed opportunity for palliative care plan in the EDn=5 (39.7%)	P-value
<b>Chief complaints</b>						
Alteration of consciousness	8(36.4)	3(37.5)	1.000	25(31.7)	16(30.8)	0.916
Dyspnea	6(27.3)	0	0.155	36(45.6)	18(34.6)	0.213
Sudden loss of consciousness	5(22.7)	3(37.5)	0.643	7(8.9)	4(7.7)	1.000
Fever				2(2.5)	2(3.9)	0.649
Diarrhea				1(1.3)	3(5.8)	0.300
<b>Diagnosis</b>						
Pneumonia	5(22.7)	0	0.287	26(32.9)	21(40.4)	0.383
Advanced cancer				23(29.1)	4(7.7)	0.004
Acute ischemic heart disease	6(27.3)	3(37.5)	0.589	3(3.8)	6(11.5)	0.154
Sepsis	6(27.3)	2(25.0)	1.000	8(10.1)	1(1.9)	0.086
Urinary tract infection				4(5.1)	5(9.6)	0.482
Stroke				1(1.3)	4(7.7)	0.081

**Abbreviation:** ED, emergency department.



**Table 4** Treatment Received During Hospital Visits

	Group 1, N=30(%)			Group 2, N=131(%)		
	Had Palliative Care plan Before, n=22 (73%)	Missed Opportunity for Palliative Care Plan Before, n=8 (27%)	P-value	Had Palliative Care Plan in the ED, n=79 (60.3%)	Missed Opportunity for Palliative Care Plan in the ED n=52 (39.7%)	P-value
ET tube intubation	18(81.8)	7(87.5)	1	34(43.0)	37(71.2)	0.002
Foley catheter insertion	10(45.4)	3(37.5)	1	71(89.9)	49(94.2)	0.525
Intravenous catheter insertion (peripheral)	22(100)	8(100)		79(100)	52(100)	
Central venous catheter insertion				1(1.3)	5(9.6)	0.036
Cardiopulmonary resuscitation (CPR)	14(63.6)	8(100)	0.071	14(17.7)	20(38.5)	0.008
Total CPR time (minutes), median (IQR)	45(32, 55)	45(32,60.5)	0.812	27(17,40)	30(21,40)	0.766
Morphine or fentanyl Intravenous	4(18.2)	0	0.55	66(83.5)	47(90.4)	0.266

**Abbreviations:** ED, emergency department; ET, endotracheal CPR, cardiopulmonary resuscitation; IQR, Interquartile range.

ED visit, the figure increased to 70.7%.<sup>8</sup> In 2011, researchers of a study in the United Kingdom of 102 people aged >65 years, who had died in the ED, found that 57% had diagnoses with a PC need, but only 14% had received PC services.<sup>19</sup> EDs are noisy environments with little space for family members or caregivers to discuss their loved ones' end-of-life care decisions; as such, EPs can be uncomfortable discussing end-of-life care in that setting.<sup>20</sup> Because of limited hospital bed space, patients with acute life-threatening conditions often take priority over PC patients,<sup>21</sup> potentially creating stress and anxiety for EPs, ED staff, patients, and caregivers.<sup>22</sup> In addition, even though the American College of Emergency Physicians recommends that EDs develop PC training, few institutions offer PC training programs. As a result, EPs can lack adequate training in caring for older adults at the end of life.<sup>20,22</sup>

Among the missed opportunities for PC planning in the ED, the number of hospital visits, functional status, cancer, and IHD were associated with EPs' initiating PC. Missed opportunities were also associated with fewer ED visits, possibly because any ED visit increases the opportunity for a provider to offer PC. A retrospective study conducted at a Hungarian tertiary care center revealed factors associated with two or more ED revisits within one year, which included prior hospice care (Odds ratio [OR] 1.87, 95% CI 1.05–3.31) and residing in a nursing home (OR 3.09, 95% CI 1.88–5.07).<sup>3</sup> In one study in Korea, making multiple ED visits in one year was associated with receiving a PC plan to prevent avoidable ED visits (odds ratio: 1.204; 95% confidence interval: 1.156–1.255,  $p < 0.001$ ).<sup>23</sup> Additionally, research conducted at a tertiary center in Thailand indicated that advanced cancer patients who received palliative care for more than 100 days showed a decrease in visits to the Emergency Department (ED). Conversely, patients with a Palliative Performance Scale between 50% and 90% were more likely to visit the ED.<sup>17</sup>

In our study, there were fewer missed opportunities for cancer patients than for patients with other diseases, possibly because ED staff perceive or recognize cancer as a chronic and mostly non-curable disease. Furthermore, there are many studies about PC for cancer<sup>7,23,24</sup> in the ED. In contrast, we found more missed opportunities with IHD in this study. EPs might consider that owing to medical advances, many interventions are now available to rescue heart vessels, and cardiac-arrest patients can even survive with good quality of life.

Furthermore, more than 80% of patients in the Group 1 received endotracheal tube intubation even when they had a PC plan beforehand. Patients and relatives who are not prepared for symptoms (eg, dyspnea, pain, altered mental status) at the end of life are more likely to visit the ED near the end of life.<sup>21</sup> In Thai culture,<sup>25</sup> older adults live with their relatives; not all family members might be involved in PC plans, but in emergencies, the whole family might come to the hospital, and it can be difficult to make decisions about limiting life-sustaining treatment. The rate of ETT was lower in the Group 2, which might have been because patients, their relatives, and staff had more time to consult with palliative care expert on decisions. Our study revealed that the direct medical costs were lower in the PC group compared to the

missed opportunity group, which aligns with findings from a study conducted in Kazakhstan. In that study, the mean treatment cost for the hospice group was \$31 lower than for the standard cancer center care group.<sup>26</sup>

## Limitations

Our study had several limitations. Notably, the nature of chart review is such that information might have been incomplete; for instance, the patients might have had PC plans that had not been documented in their records. Further, the generalizability is limited because a single study in central Bangkok cannot fully reflect Thailand's diverse cultures and environments. Moreover, PC care encompasses far more than medical treatment, and the PC documented in the ED records might not have included the PC given by specialists.

## Conclusion

In this study, most of the older adults who visited the ED of a hospital in central Bangkok were in need of PC, and 37% of the patient visits represented missed opportunities for PC planning. The EPs herein considered PC planning with cancer patients more often than those with other diseases. Recognizing patients in the ED whose cases warrant PC and initiating this care can improve the quality of their end of life. The adoption of standardized palliative care guidelines in Emergency Departments (EDs) could potentially enhance the situation.

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## Disclosure

The authors report no conflicts of interest in this work.

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