Effects of Early Hospital-Based Palliative Care Consultation on Length of Stay and Costs of Care at Indonesian Tertiary Hospital

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Effects of Early Hospital-Based Palliative Care Consultation on Length of Stay and Costs of Care at Indonesian Tertiary Hospital

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Abstract
Despite the numerous benefits of palliative care for cancer patients, there have been few studies on palliative care services for terminal cancer patients, particularly near the end of life. This study aimed to evaluate whether there were differences in length of stay and cost of care associated with how early or late a patient received palliative care intervention. Another objective was to compare the length of stay and cost of care of those who received palliative care intervention and those who did not. This study used a cohort retrospective design at Hospital A, Jakarta, Indonesia, from January to December 2019. The diagnosis of terminal cancer was based on medical records. Data on length of stay and costs of care were based on medical records and finance billing. The hospitalized terminal cancer patients (392) were recruited by consecutive sampling. The length of stay and costs of care for patients with advanced cancer who received palliative care consultations were longer and higher than for patients who did not receive them. However, if palliative care consultation is provided early, the increase in length of stay and costs are less.

Keywords: costs of care, early consultation, hospital-based palliative care, length of stay

Introduction
Palliative care (PC) is the active, holistic care of people of all ages suffering from disease or injury. Health-related suffering is substantial when it cannot be eased without medical intervention and interferes with physical, social, spiritual, and/or emotional functioning.1 The PC is an interdisciplinary medical service to reduce the pain and suffering of patients with life-threatening illnesses and limited life expectancy. According to the World Health Organization (WHO), PC is appropriate for both cancer and non-cancer patients.2

The PC arose with the formation of the contemporary medical paradigm as a blossoming speciality of clinical medicine that garnered widespread attention in many nations. Unlike traditional anticancer treatment, which focuses on killing and inhibiting cancer cell reproduction and metastasis through chemotherapy, radiotherapy, surgery, and/or hormone therapy, PC aims to anticipate, prevent, and reduce suffering through patient- and family-centered health care. An interdisciplinary PC team typically designs hospital-based interventions to help patients and their families better understand the prognosis and treatment options, clarify care goals, and assist in disease progression planning.3,4

The increasing number of cancer patients will increase palliative and end-of-life care needs.3 This health service is burdensome for hospitalized cancer patients because it costs more and prolongs their stay. A study on several Southeast Asian countries found an increasing number of cancer patients who required assistance from their respective governments due to their health-related and economic burdens.5 A study in the United States reported that implementing PC in hospitals will reduce the length of stay and cost for patients, prevent excessive or unnecessary examinations and procedure costs, and improve physical and psychological complaints.6

While, a study in China evaluating the quality of life of patients with advanced lung cancer showed improved quality of life compared to patients who received only standard treatment for their cancer.7 Another study in the Netherlands, which evaluated the impact of direct costs on hospitalized patients with advanced illnesses such as terminal cancer, chronic obstructive pulmonary disease, congestive heart failure, and HIV/AIDS, showed...
benefits from implementing PC. Although many studies reported benefits in cost-effectiveness, one study reported the opposite.

Several studies have shown that early palliative care consultation (PCC) in patients with terminal cancer in hospitals and communities may reduce costs of care and length of stay. There was very little data on early PCC in Indonesia by the time this study was conducted. Therefore, the main objective of this study was to evaluate whether there were differences in length of stay and cost of care in the early PC intervention group versus those who received palliative care intervention later (non-intervention group). Another objective was to compare the length of stay and cost of care in the intervention and non-intervention groups.

Method

This study used a cohort retrospective method, conducted in the inpatient unit of Hospital A, Jakarta, Indonesia, from January to December 2019. Several inclusion criteria included terminal cancer patients in stage IV with a life expectancy of 6–12 months, were aged ≥18 years, and, in the intervention group, had received at least one consultation with the palliative team. In a retrospective cohort study, data were gathered from records. This means the results had already happened; however, the fundamental study design remained largely the same. It started with the exposure and other factors at baseline and follow-up, then assessed the outcome during the course of the follow-up period.

The sampling method was consecutive sampling. Each patient with suitable criteria was included in this study until the required number of patients was fulfilled. The sample size used a significance level of 95% or \( \alpha = 0.05 \) and a power level of 90% or \( \beta = 0.10 \), and the observed outcome was the difference in hospitalization costs determined to have SD = 0.50 assumed value. The estimated difference between the mean outcome of the non-intervention group and the intervention group to palliative care (U0-U1) was 0.8 (referring to the study results by Johnston, et al., and Pourhoseingholi, et al.); hence, the estimated minimum number of samples needed was 196 in each group. Patients were divided into intervention and non-intervention groups. Intervention patients had received at least one palliative team consultation, while non-intervention patients did not receive consultation.

The intervention was a PCC with an interdisciplinary team of palliative care physicians assisting in the treatment of seriously ill patients through the identification and treatment of pain and other symptoms, clarifying treatment options, establishing goals of care and advance plans, and helping patients and family members select treatments that match their goals. The consultations were initiated at the request of the attending physician. The variable or observed factors in this study consisted of the independent and dependent variables. The independent variable is a variable that affects or causes the change or emergence of the dependent variable. In contrast, the dependent variable is a variable influenced or becomes the result of the independent variable. In this study, the independent variable observed was a PCC, and the dependent variables were the length of stay and costs of care for patients with terminal cancer at Hospital A, Jakarta, Indonesia.

The study instruments were patient medical records, finance billing, and questionnaires. One USD was equivalent to IDR 14,200 at the time of the study. Data were analyzed by univariate, bivariate, and multivariate analysis to obtain baseline data on respondent characteristics. To evaluate the differences between the length of stay and costs of care in terminal cancer patients based on consultation with the palliative team, the Mann-Whitney Test was used. The ANOVA and non-parametric post-hoc tests were used to evaluate the differences in the cost of care and length of stay. Consultation times were divided into three groups: less than seven days, 7–14 days, and more than 14 days. Data were analyzed using SPSS 20.0 software by IBM under the licensed of the Faculty of Medicine, Universitas Indonesia.

Results

Table 1 shows the subject characteristics of the study, and Figure 1 shows a total of 392 hospitalized patients.
with terminal cancer recruited by consecutive sampling. One hundred and ninety-six participants were recruited for the intervention and non-intervention groups: 61.7% were female in the intervention group, and 51.6% were male in the non-intervention group. The mean age of both groups was 53 years. The most common types of cancer were cervical in the intervention group and nasopharynx in the non-intervention group.

Table 2 shows the length of stay for the PCC group was longer (12 days versus 6 days) and the cost of care for all services (doctor visits, accommodation, medication, radiology, laboratory, and procedure) was higher than in the group that did not receive PCC (USD 2,008.07 versus 725.42). Stepwise multivariate linear regression analysis revealed that length of stay was independently associated with doctor visits ($\beta = 0.125, p$-value $= 0.031$) and radiology examinations ($\beta = 0.132, p$-value $< 0.001$). At the same time, the cost of care was independently associated with doctor visits ($\beta = 0.069, p$-value $< 0.001$), accommodation ($\beta = 0.167, p$-value $< 0.001$), medication ($\beta = 0.386, p$-value $< 0.001$), radiology ($\beta = 0.083, p$-value $< 0.001$), laboratory ($\beta = 0.115, p$-value $< 0.001$), and procedure ($\beta = 0.337, p$-value $< 0.001$).

Table 3 shows the distribution of consultation time concerning the cost of care and length of stay of the patients who received PCC. Consultation times of less than seven days were most common, followed by more than 14 days, and finally 7–14 days. The analysis found that the longer the patients were consulted, the more the cost of care and length of stay were affected.

After conducting a subgroup analysis in the PCC group, the length of stay and cost of care for the early
consultation subgroup (less than seven days) significantly differed from the 7–14 days subgroup and the more than 14 days subgroup, as shown in Table 4.

**Discussion**

The most common type of cancer in the group received consultations by the palliative team was cervical cancer; in the group that did not receive consultations, it was nasopharynx cancer. According to the WHO, in 2018, the most common types of cancer worldwide were lung, breast, colorectal, prostate, skin, and stomach cancer. Almost 80% of patients with cancer were in a terminal condition.\(^{15}\)

This study showed that patients who received PCC had longer stays and higher hospitalization costs. The length of stay was almost the same as in Australia. The average length of stay was nearly twice as long as for all overnight hospitalizations (excluding same-day stays): 10 days (9.2 days for palliative care and 11.1 days for other end-of-life care) against 5.3 days for all hospitalizations.\(^{16}\) Studies by May, *et al.*, and Subramaniam, *et al.*, showed the economic benefits of reducing hospitalization costs.\(^{7,17}\)

This study found that those receiving early PCC (less than seven days) had a shorter length of stay and less cost than those receiving PCC later than seven days. These results were in line with a study by Fitzpatrick, *et al.*, reporting that early palliative intervention would be correlated with financial savings.\(^{18}\) The study reported that patients referred early had significantly shorter mean lengths of stay (4.5 days) and lower in-hospital mortality compared to those referred late, who had an average length of stay of 7.4 days.\(^{18}\)

The recommendation by the American Society of Clinical Oncology and Oncology Nursing Society is that a consultation with the palliative team should be carried out for cancer patients with metastases and worsening symptoms.\(^{19}\) Clinicians were often late in connecting patients with the palliative team when patients’ condition was poor. Also, there was an increased risk of death after various diagnostic or therapeutic interventions had been carried out.

Following a subgroup analysis in the PCC group, it was discovered that early consultation (less than seven days) led to significantly different results than consulting from 7–14 days and later than 14 days. This study supported a previous systematic review stating that early palliative care interventions may have a greater impact on quality of life and symptom intensity in patients with advanced cancer than usual/standard cancer care alone.\(^{20}\)

A study by Zaborowski, *et al.*, of 711 patients revealed that the pilot group’s pre-consult length of stay was reduced from 4.8 days to 3.7 days, direct cost savings were 26%, and the pilot group had a 2-day reduction in overall length of stay compared to the baseline and control groups.\(^{21}\)

A study by Chanthong, *et al.*, showed the palliative care unit was associated with cost savings in caring for terminally ill patients in a tertiary hospital in Thailand.\(^{22}\) To improve early PCC, hospitals use screening tools. In Indonesia, three assessments have been validated to be used in hospitals as aids for identifying patients who require palliative care.\(^{23-25}\) According to a public health specialist, physicians and nurses are often cautious about discussing patients’ care preferences near the end of life.

End-of-life care is as important as politicians assume, but not for the reasons frequently provided.\(^{26}\) Efforts on end-of-life care have to be doubled to better understand the needs of patients with terminal illnesses; so that patients can receive intensive treatment if they want it and assistance in enabling a more peaceful death when they do not; healthcare providers must learn how to manage that transition. It is vital not to get sidetracked by promises of cost savings along the way.\(^{26}\)

This study had several limitations: the psychosocial, functional, and spiritual aspects were not evaluated. The risk of bias was reduced by limiting the inclusion and exclusion criteria. The advantage of this study was that the sample matched the sample size calculation. Moreover, studies on the length of stay and hospitalization costs of terminal cancer patients receiving palliative care intervention are still limited in Indonesia.

**Conclusion**

In the PCC group, those receiving early consultation have a shorter length of stay and lower costs of care. The length of stay and costs of care for patients with advanced cancer who receive PCC are longer and higher

### Table 4. Comparison of Length of Stay and Costs of Care Variables in Palliative Care Consultation

<table>
<thead>
<tr>
<th>Variable</th>
<th>&lt;7 vs. 7-14 days</th>
<th>&lt;7 vs. &gt;14 days</th>
<th>7-14 vs. &gt;14 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay*</td>
<td>0.003</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Costs of care*</td>
<td>0.014</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Note: *Mann-Whitney test
than for patients who do not. This study suggests to hospital management that patients with progressive or advanced cancer should consult the palliative team immediately to reduce the length of stay and hospitalization costs. Further studies are needed to evaluate indirect costs and different service units.

Abbreviations
PC: Palliative Care; WHO: World Health Organization; PCC: Palliative Care Consultation.

Competing Interest
The authors declared no conflicts of interest.

Availability of Data and Materials
The data that support the findings of this study are available from the corresponding author upon reasonable request.

Authors’ Contribution
RP designed the study and collected data, and HS contributed to the analysis and writing. RP, HS, WR, S, EF, and S contributed to the manuscript’s writing.

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References
12. Sedgwick P. Retrospective cohort studies: Advantages and disadvantages. BMJ. 2014; 348: g1072. DOI: 10.1136/bmj.g1072


