Kesmas

Volume 18
Issue 3 *August*

Article 6

8-31-2023

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

Rudi Putranto
Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia, putranto.rudi09@gmail.com

Hamzah Shatri
Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia, hshatri@yahoo.com

Wulyo Rajabto
Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia, wulyo02@gmail.com

Sumariyono Sumariyono
dr. Cipto Mangunkusumo National Central General Hospital, sumariyono@gmail.com

Edward Faisal
Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia, edwardfaisalmd@gmail.com

See next page for additional authors

Recommended Citation

Putranto R , Shatri H , Rajabto W , et al. Effects of Early Hospital-Based Palliative Care Consultation on Length of Stay and Costs of Care at Indonesian Tertiary Hospital. *Kesmas*. 2023; 18(3): 191-196
DOI: 10.21109/kesmas.v18i3.6936
Available at: https://scholarhub.ui.ac.id/kesmas/vol18/iss3/6

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

Authors

Rudi Putranto, Hamzah Shatri, Wulyo Rajabto, Sumariyono Sumariyono, Edward Faisal, and Sihwastuti Sihwastuti

Putranto, *et al. Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*. 2023; 18 (3): 191-196
DOI: 10.21109/kesmas.v18i3.6936

Kesmas: Jurnal Kesehatan Masyarakat Nasional (Kesmas: National Public Health Journal)

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

Rudi Putranto,[1*], Hamzah Shatri[1], Wulyo Rajabto[2], Sumariyono[3], Edward Faisal[1], Sihwastuti[4]

[1]Division of Psychosomatic and Palliative Medicine, Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia – Cipto Mangunkusumo National Central General Hospital, Jakarta, Indonesia, [2]Division of Hematology and Medical Oncology, Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia – Cipto Mangunkusumo National Central General Hospital, Jakarta, Indonesia, [3]Director of Medical Service and Nursing, Cipto Mangunkusumo National Central General Hospital, Jakarta, Indonesia, [4]Nurse Manager of Palliative Care Team, Cipto Mangunkusumo National Central General Hospital, Jakarta, Indonesia

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 specialty 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.[5] 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.[6] 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.[7]

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.[8] 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

Correspondence*: Rudi Putranto. Division of Psychosomatic and Palliative Medicine, Department of Internal Medicine, Universitas Indonesia – Cipto Mangunkusumo Hospital, Diponegoro Street No. 71, Jakarta 10430, Indonesia, Email: putranto.rudi09@gmail.com, Phone: +62 812-8532-3254*

Received : May 24, 2023
Accepted : August 30, 2023
Published : August 31, 2023

benefits from implementing PC.[9] Although many studies reported benefits in cost-effectiveness, one study reported the opposite.[10]

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.[8,9] 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.[11,12]

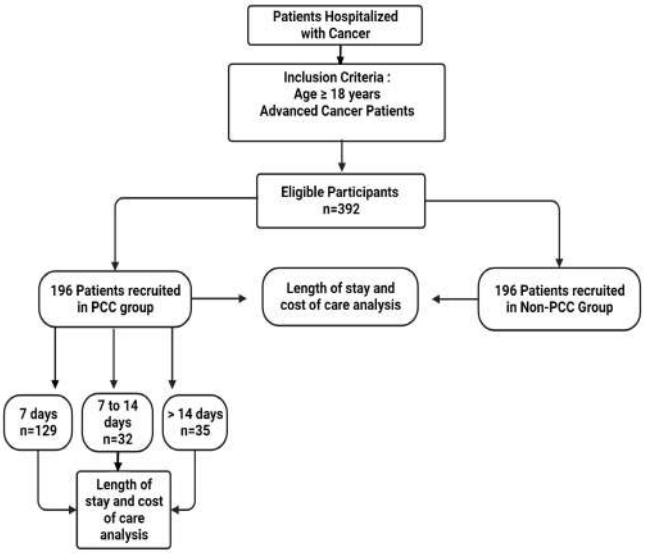
The sampling method was consecutive sampling. Each patient with suitable criteria was included in this study until the required number of patients was fulfilled. The sample size used a significance level of 95% or $\alpha = 0.05$ and a power level of 90% or $\beta = 0.10$, and the observed outcome was 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.*,[13] and Pourhoseingholi, *et al.*,[14]); 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.[12] In contrast, the dependent variable is a variable influenced or becomes the result of the independent variable.[14] 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



Note: PCC = Palliative Care Consultation

Figure 1. Study Recruitment and Sampling Technique

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

Table 1. Characteristic of Respondent

Variable	Category	Palliative Care Consultation	
		Yes (n = 196)	No (n = 196)
Sex	Male	75 (38.3)	110 (56.1)
	Female	121 (61.7)	86 (43.9)
Age (years)	Min-max	53 (21–85)	53 (19–84)
Type of cancer	Nasopharynx	16 (8.2)	60 (30.6)
	Breast	25 (12.5)	12 (6.1)
	Lung	16 (8.2)	5 (2.6)
	Hepatic cancer	17 (8.7)	9 (4.6)
	Cervical	32 (16.2)	12 (6.1)
	Colon	15 (7.7)	9 (4.6)
	Sarcoma	7 (3.6)	12 (6.1)
	Bladder	2 (1.0)	3 (1.5)
	Prostate	3 (1.5)	1 (0.5)
	Kidney	1 (0.5)	0 (0)
	Ovarium	9 (4.6)	5 (2.6)
	Blood	15 (7.7)	36 (18.4)
	Other cancers not listed above	38 (19.4)	32 (16.3)

Table 2. Length of Stay and Costs of Care

Variable	Palliative Care Consultation*		p-value
	Intervention	Non-Intervention	
Length of stay (days)	12 (1–91)	6 (1–31)	<0.001
Doctor visit cost (SD)	82.51 (0–1,261.55)	32.96 (0.99–531.83)	<0.001
Accommodation cost	232.40 (23.21–3,461.82)	112.17 (0–3,155.37)	<0.001
Medication cost	571.14 (19.22–8,394.82)	278.28 (2.54–3,182.38)	<0.001
Radiology cost	69.42 (0–1,537.39)	00 (0–817.59)	<0.001
Laboratory cost	260.55 (32.40 – 2,105.12)	60.83 (0 – 1,209.82)	<0.001
Procedure cost	4,033.76 (7.31–5,721.09)	147.47 (0–4,735.47)	<0.001
Total cost	2,008.07 (264.56–17,910.59)	725.42 (109.37–10,807.05)	<0.001

Notes: *Median (Minimum-Maximum), SD = Standard Deviation, All the cost is in USD

Table 3. Distribution of Consultation Time Concerning Costs of Care and Length of Stay in Patients with Palliative Care Consultation (n = 196)

Consultation Time	n (%)	Costs of Care (USD)	Length of Stay (Days)
<7 days	129 (65.8)	Mean: 21,324.17	Average: 10.6
		Median: 1,387.80	Median: 8
		Min-Max: 264.56–17,910.59	Min-Max: 1–91
7-14 days	32 (16.3)	Mean: 3,769.73	Average: 17.8
		Median: 3,281.13	Median: 15.5
		Min-Max: 412.23–17,071.30	Min-Max: 1–43
>14 days	35 (17.9)	Mean: 6,467.53	Average: 29.17
		Median: 5,138.43	Median: 28
		Min-Max: 476.43–15,599.54	Min-Max: 2–59

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

Variable	<7 vs. 7-14 days	<7 vs. >14 days	7-14 vs. >14 days
Length of stay*	0.003	<0.001	<0.001
Costs of care*	0.014	<0.001	<0.001

Note: *Mann-Whitney test

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

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.

Ethics Approval and Consent to Participate

Ethics approval was obtained from the Research Ethics Committee of the Faculty of Medicine, Universitas Indonesia, and Cipto Mangunkusumo Hospital No.: KET-362/UN2.F1/ETIK/PPM.00.02/2019.

Competing Interest

The authors declared no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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.

Acknowledgment

The authors would like to extend their immense thanks to all the study participants, the patients and palliative care team, and the study sites for all their time, support, and encouragement. The authors also thank Mrs. Utami for her advice in preparing this study and Dr. Stevanie for editing. This study is supported by Cipto Mangunkusumo National Central General Hospital, Jakarta, Indonesia.

References

1. Radbruch L, De Lima L, Knaul F, et al. Redefining Palliative Care-A New Consensus-Based Definition. J Pain Symptom Manage. 2020; 60 (4): 754-764. DOI: 10.1016/j.jpainsymman.2020.04.027
2. World Health Organization. Planning and implementing palliative care services: A guide for programme managers. Geneva: World Health Organization; 2016.
3. Minnaar CA, Szasz A, Lee SY, et al. Supportive and Palliative Care in Cancer Therapies—Path from Tumor-Driven Therapies to Patient-Driven Ones. Int J Clin Med. 2022; 13 (7): 287-359. DOI: 10.4236/ijcm.2022.137024
4. Bajwah S, Oluyase AO, Yi D, et al. The effectiveness and cost-effectiveness of hospital-based specialist palliative care for adults with advanced illness and their caregivers. Cochrane Database Syst Rev. 2020; 9 (9): CD012780. DOI: 10.1002/14651858.CD012780.pub2
5. Calvache JA, Gil F, De Vries E. How many people need palliative care for cancer and non-cancer diseases in a middle-income country? Analysis of mortality data. Rev Colomb Anestesiol. 2020; 48 (4). DOI: 10.1097/cj9.0000000000000159
6. ACTION Study Group. Catastrophic health expenditure and 12-month mortality associated with cancer in Southeast Asia: Results from a longitudinal study in eight countries. BMC Med. 2015; 13: 190. DOI: 10.1186/s12916-015-0433-1
7. Subramaniam DS, Al-Hammadi N, Jenkins A, Hinyard LJ. Association between palliative care consultation, hospital length of stay, and in-hospital costs in women with metastatic breast cancer in United States. J Clin Oncol. 2022; 40 (16 Suppl): e24068. DOI: 10.1200/JCO.2022.40.16_suppl.e24068
8. Zhuang H, Ma Y, Wang L, Zhang H. Effect of early palliative care on quality of life in patients with non-small-cell lung cancer. Curr Oncol. 2018; 25 (1): e54-e58. DOI: 10.3747/co.25.3639
9. Brinkman-Stoppelenburg A, Polinder S, Olij BF, et al. The association between palliative care team consultation and hospital costs for patients with advanced cancer: An observational study in 12 Dutch hospitals. Eur J Cancer Care (Engl). 2020; 29 (3): e13198. DOI: 10.1111/ecc.13198
10. Robinson J, Gott M, Gardiner C, Ingleton C. The 'problematisation' of palliative care in hospital: An exploratory review of international palliative care policy in five countries. BMC Palliat Care. 2016; 15: 64. DOI: 10.1186/s12904-016-0137-0
11. Setia MS. Methodology Series Module 1: Cohort Studies. Indian J Dermatol. 2016; 61 (1): 21-25. DOI: 10.4103/0019-5154.174011
12. Sedgwick P. Retrospective cohort studies: Advantages and disadvantages. BMJ. 2014; 348: g1072. DOI: 10.1136/bmj.g1072
13. Johnston KM, Lakzadeh P, Donato BMK, et al. Methods of sample size calculation in descriptive retrospective burden of illness studies. BMC Med Res Methodol. 2019; 19: 9. DOI: 10.1186/s12874-018-0657-9
14. Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. Gastroenterol Hepatol Bed Bench. 2013; 6 (1): 14-7.
15. World Health Organization. Cancer. Geneva: World Health Organization; 2022.
16. Australian Institute of Health and Welfare. Palliative care services in Australia. Canberra: Australian Institute of Health and Welfare; 2023.
17. May P, Garrido MM, Cassel JB, et al. Prospective Cohort Study of Hospital Palliative Care Teams for Inpatients with Advanced Cancer: Earlier Consultation Is Associated With Larger Cost-Saving Effect. J Clin Oncol. 2015; 33 (25): 2745-52. DOI: 10.1200/JCO.2014.60.2334
18. Fitzpatrick J, Mavissakalian M, Luciani T, et al. Economic Impact of Early Inpatient Palliative Care Intervention in a Community Hospital Setting. J Palliat Med. 2018; 21 (7): 933-939. DOI: 10.1089/jpm.2017.0416
19. Oncology Nursing Society. Palliative Care for People with Cancer. Pittsburgh, PA: Oncology Nursing Society; 2014.
20. Haun MW, Estel S, Rücker G, et al. Early palliative care for adults with advanced cancer. Cochrane Database Syst Rev. 2017; 6 (6):

CD011129. DOI: 10.1002/14651858.CD011129.pub2
21. Zaborowski N, Scheu A, Glowacki N, et al. Early Palliative Care Consults Reduce Patients' Length of Stay and Overall Hospital Costs. Am J Hosp Palliat Care. 2022; 39 (11): 1268-1273. DOI: 10.1177/10499091211067811
22. Chanthong P, Punlee K, Kowkachaporn P, et al. Comparison of direct medical care costs between patients receiving care in a designated palliative care unit and the usual care units. Asia Pac J Clin Oncol. 2023; 19 (4): 493-498. DOI: 10.1111/ajco.13882
23. Witjaksono MA, Effendy C, Mulatsih S, et al. Criteria for Palliative Care Referral in Oncology Practice: An Instrument Development. Bali Med J. 2021; 10 (1): 281-290. DOI: 10.15562/bmj.v10i1.2120
24. Efendy C, Silva JFDS, Padmawati RS. Correction to: Identifying palliative care needs of patients with non-communicable diseases in Indonesia using the SPICT tool: A descriptive cross-sectional study. BMC Palliat Care. 2022; 21 (1): 19. DOI: 10.1186/s12904-022-00909-4
25. Putranto R, Agung RA, Irawan C, et al. Palliative Screening Tools to Identify Palliative Care Consultation at Tertiary Hospital. Acta Med Indonesiana. 2022; 54 (1): 28-34.
26. Jha AK. End-of-Life Care, Not End-of-Life Spending. JAMA. 2018; 320 (7): 631-632. DOI: 10.1001/jama.2018.11177