一、選擇題: 每題 5 分，共 4 題、20 分。

1. 細菌性腦膜炎與病毒性腦膜炎兩者在進行腦脊髓液檢查時典型的表現有所不同。與病毒性腦膜炎相比，細菌性腦膜炎的脊髓液檢查發現以下敘述何者錯誤? (複選)

(A). 嗜中性白血球上升的程度比較顯著。
(B). 淋巴球數量上升比較顯著。
(C). 葡萄糖濃度上升較為顯著。
(D). 腦脊髓液壓力上升比較顯著。

2. 為兒童進行心肺復甦術時，下列敘述何者錯誤? (複選)

(A). 心肺復甦的順序為 A-B-C。
(B). 按壓深度為胸部前後徑之 1/3-1/2。
(C). 按壓速度 100-120 次/分。
(D). 兩人施救時按壓與吹氣比為 30:2。

3. 為兒童抽痰時，下列敘述何者錯誤? (複選)

(A). 抽痰之前除非有禁忌症，否則應給予 100%氧氣 1-3 分鐘。
(B). 滴數滴生理食鹽水到病人的氣管內管，並用甦醒球按壓數次再抽痰，可幫助氣管內痰液稀釋。
(C). 抽痰適切的壓力：新生兒為 60-80cmHg、嬰幼兒為 80-100 cmHg。
(D). 由鼻孔抽痰時，抽痰管的放置深度為鼻孔(尖)至下頜骨的距離。

4. 某氣喘兒童在進行自我肺功能監測時，其當天的 peak expiratory flow rate (PEFR)測出之值為其個人最佳值的 75%，變異度為 20%，其當天的狀況處於哪一區?

(A). 綠燈區。
(B). 黃燈區。
(C). 紅燈區。
(D). 無法判讀，須再測一次。

二、簡答題: 共 5 題、80 分，每題給分依各題配分

1. 接受機械心臟瓣膜置換手術的病童，須口服抗凝血劑 Warfarin 治療及監測其 INR(international normalized ratio)。

(1). 請寫出 INR 的計算公式(5 分)。
(2). 此類病人 INR 通常會期望維持的範圍(5 分)。

2. 接受化學治療之癌症病人須監測其 ANC (Absolute neutrophil count)。

(1). 請寫出 ANC 的計算公式及正常範圍(5 分)。
(2). 若 ANC 低下時應採取的措施為何? (5 分)

3. 因年幼兒童身體及發展上的不成熟，許多醫院把年幼兒童列為跌倒的高危險群，並設立相關的預防跌倒政策。

(1). 您工作或兒科實習單位對於兒童跌倒的高危險群年齡介定範圍為何? (5 分)
(2). 由兒童發展的角度來看，設定該年齡的理由為何? (15 分)
(若您的工作或兒科實習的單位沒有設定年齡相關的政策，請從兒童發展的角度來思考您會如何設定? 理由為何?)

4. 您指導一位新進護理同仁病房常規護理，工作的第一天您請這位同仁為一位新生兒測量生命徵象，您看到此同仁所記錄的生命徵象如下，TPR: 35.8°C(由校正為口溫的耳溫機測得)、102bpm、35bpm; BP: 82/48mmHg，記錄的格式(記錄的顏色、符號等) 均正確。

(1). 請判讀以上資料 (10 分)。
(2). 您會給予新人的指導回饋內容(5 分)。

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5. 請閱讀以下研究之研究摘要、研究方法及表 1、表 2 後，回答下列問題:

Kim, C. H., Lee, J., Lee, J. W., & Kim, M. S. (2024). The impact of specialized pediatric palliative care on advance care planning and healthcare utilization in children and young adults: a retrospective analysis of medical records of in-hospital deaths. BMC *Palliative Care, 23*(1), 127.

(1). 請同時以中文及英文寫出這個研究的研究設計(5 分)
(2). 請以中文寫出這個研究的 specialized palliative care (SPC)介入措施的方式或內容為何? (5 分)
(3). 由表 1 及表 2 的資料中之閱讀與分析，這個研究的主要發現有哪些? (15 分) (此題可用中文或英文任一種方式作答)

Abstract

This study evaluates the impact of specialized palliative care (SPC) on advance care planning (ACP) and patterns of end-of-life care for patients who died in the hospital. Methods: This is a retrospective cohort study of medical records extracted from a clinical data warehouse, covering patients who died aged 0–24 in an academic tertiary children's hospital in South Korea. Participants were categorized into before (2011–2013; pre-period) and after (2017–2019; post-period) the introduction of an SPC service. Within the post-period, patients were further categorized into SPC recipients and non-recipients. Results: We identified 274 and 205 patients in the pre-period and post-period, respectively. ACP was conducted more and earlier in the post-period than in the pre-period, and in patients who received palliative care than in those who did not.

Methods

Study design

A retrospective review of medical records was conducted at Seoul National University Children's Hospital (SNUCH). The ethics committee of the Seoul National University Hospital (registration number 2010-112-1165) waived the requirement to obtain written informed consent, as this was a retrospective study. This study was reported in accordance with the REporting of studies Conducted using Observational Routinely collected health Data (RECORD) recommendations.

Setting

SNUCH, the largest pediatric tertiary care center in South Korea. The center provides consultation services and outpatient clinics by a multidisciplinary team of physicians (a palliative care physician and a psychiatrist), nurses, a social worker, expressive therapists (art, movement, play), and more. SPC begins when a patient's primary physician makes a referral. The center provides care services for inpatients and outpatients, including pain and symptom management, communication and decision-making support, care coordination, emotional and social support, art therapy, and bereavement care. In addition, telephone counseling and need-based home visits are provided for patients at home during end-of-life.

Participants

This study included all patients aged < 25 years who were treated and died at SNUCH in two different periods, before or after the implementation of palliative care: (a) pre-period (1 January 2011 to 31 December 2013) and (b) post-period (1 January 2017 to 31 December 2019). These periods were selected to account for the time it takes for acculturation of integrated palliative care at the institutional level.

Variables

We collected patients' demographic and clinical characteristics and SPC enrollment. Treatment duration was defined as months from diagnosis to death based on the primary diagnosis of the last hospitalization. We defined ACP at three levels; if a preference or plan for future care was recorded in the medical records, we categorized it as "discussed" and collected the date to generate "the days from ACP initiation to death"; if wishes for life-sustaining treatment (LST) are recorded in the medical records but there was no completed legal document, we categorized it as "medical documentation on LST;" if there was a legal document on wishes for LST, we categorized as "legal documentation on LST." Furthermore, end-of-life care characteristics during the last month of life were collected, including the number of hospitalizations, length of stay, use of intensive treatments, inpatient costs, number of outpatient department (OPD) visits, and ED visits. Admission following an ED visit was categorized as admission, as the data were not distinguishable; therefore, ED visits could be underestimated in this study. Variables of pediatric ICU admission rates and days

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were generated to analyze ICU utilization only with physical deterioration, excluding patients who were born and stayed in the neonatal intensive care unit (NICU) until death. The primary diagnoses were categorized using the complex chronic condition (CCC) classification (version 2) based on the International Classification of Disease, 10th edition, using the "pccc" R package . Once a patient was referred to the SPC service but died outside the hospital, demographic and clinical characteristics were extracted from the SNUCH palliative care registry.

Table 1 Pattern of advance care planning and end-of-life care in the last month of life (n = 479)

Characteristics	Total (*n* = 479)		Pre-period (2011–2013) (*n* = 274)			Post-period (2017–2019) (*n* = 205)			*p*-value
	N (%), mean ± SD, or median (IQR)								
Palliative care consultation			0	(0.0)		123	(60.0)		< 0.001
Advance care planning									
Discussed	365	(76.2)	196	(71.5)		169	(82.4)		0.006
Days from ACP initiation to death	24.9	± 66.1	13.9	± 49.3	0 (0, 6)	37.6	± 79.3	6 (1, 33)	< 0.001
Medical documentation on LST	276	(57.6)	123	(44.9)		153	(74.6)		< 0.001
Legal documentation on LST	228	(47.6)	116	(42.3)		112	(54.6)		0.022
Treatment in the last month of life									
Mechanical ventilation	390	(81.4)	235	(85.8)		155	(75.6)		0.005
Oxygen therapy	290	(60.5)	213	(77.7)		77	(37.6)		< 0.001
HD or PD	134	(28.0)	64	(23.4)		70	(34.1)		0.009
Transfusions	362	(75.6)	204	(74.5)		158	(77.1)		0.509
Antibiotics	410	(85.6)	230	(83.9)		180	(87.8)		0.240
Opioids (IV, PO, or patch)	338	(70.6)	177	(64.6)		161	(78.5)		0.001
CPR	229	(47.8)	154	(56.2)		75	(36.6)		< 0.001
Chemotherapy (*n* = 156)[a]	42	(26.9)	21	(24.4)		21	(30.0)		0.434
Location of death									0.588
Pediatric ICU	198	(41.3)	117	(42.7)		81	(39.5)		
Neonatal ICU	153	(31.9)	90	(32.8)		63	(30.7)		
General ward	107	(22.3)	55	(20.1)		52	(25.4)		
ED	21	(4.4)	12	(4.4)		9	(4.4)		

SD, standard deviation; IQR, interquartile range; LST, life-sustaining treatment; HD, hemodialysis; PD, peritoneal dialysis; IV, intravenous; PO, per oral; CPR, cardiopulmonary resuscitation; ICU, intensive care unit; ED, emergency department

[a] The proportion of patients who had ever received chemotherapy was calculated using the number of patients with malignancy or hematologic and immunologic conditions as a denominator

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Table 2 Pattern of advance care planning, end-of-life care, and healthcare utilization in the last month of life in the post-period (n = 205)

Characteristics	Total (*n* = 205)		Non-SPC group (*n* = 82)			SPC group (*n* = 123)			*p*-value
	N (%), mean ± SD, or Median (IQR)								
Advance care planning									
Discussed	169	(82.4)	53	(64.6)		116	(94.3)		< 0.001
Days from ACP initiation to death	37.6	± 79.3	4.8	± 14.3	0 (0, 2)	52.6	± 91.5	16 (3, 63)	< 0.001
Medical documentation on LST	153	(74.6)	58	(70.7)		96	(78.0)		0.294
Legal documentation on LST	112	(54.6)	24	(29.3)		88	(71.5)		< 0.001
Treatment at the last month of life									
Mechanical ventilation	155	(75.6)	76	(92.7)		79	(64.2)		< 0.001
Oxygen therapy	77	(37.6)	15	(18.3)		62	(50.4)		< 0.001
HD or PD	70	(34.1)	29	(35.4)		41	(33.3)		0.029
Transfusions	158	(77.1)	61	(74.4)		97	(78.9)		0.456
Antibiotics	180	(87.8)	70	(85.4)		110	(89.4)		0.384
Opioids (IV, PO, or patch)	161	(78.5)	49	(59.8)		112	(91.1)		< 0.001
CPR	75	(36.6)	49	(59.8)		26	(21.1)		< 0.001
Chemotherapy (*n* = 70)[a]	21	(30.0)	3	(42.9)		18	(28.6)		0.421
Location of death									< 0.001
Pediatric ICU	81	(39.5)	30	(36.6)		51	(41.5)		
Neonatal ICU	63	(30.7)	44	(53.7)		19	(15.4)		
General ward	52	(25.4)	3	(3.7)		49	(39.8)		
ED	9	(4.4)	5	(6.1)		4	(3.3)		
Hospital admissions									
Hospital days	18.5	± 12.0	12.6	± 12.3	6, (1.5, 30)	22.2	± 10.2	30 (15, 30)	< 0.001
ICU admissions	149	(72.7)	73	(89.0)		76	(61.8)		< 0.001
ICU days	14.8	± 12.1	10.7	± 11.4	4 (2, 19)	18.8	± 11.5	23.5 (7, 30)	< 0.001
Pediatric ICU admissions, yes	87	(42.4)	30	(36.6)		51	(41.5)		0.484
Pediatric ICU days	17.3	± 12.2	13.8	± 12.5	7 (2, 30)	19.2	± 11.7	26 (7, 30)	0.040
Cost for inpatient service (USD)									
Inpatient cost, total	30370.7	± 27066.2	28010.3	± 30842.8	12588.9 (5787.5, 41700.8)	31865.7	± 24469.7	25020.5 (10936.6, 48152.6)	0.043
Copayment	3911.1	± 5455.5	3074.0	± 3773.8	1579.9 (442.4, 4362.8)	4436.9	± 6244.1	3084.9 (1305.0, 5584.8)	0.003
Cost, insured	3416.4	± 5508.2	3158.2	± 4352.8	2037.5 (599.1, 4123.7)	3578.5	± 6135.5	1885.0 (745.5, 4275.1)	0.599
Cost per day	2159.2	± 1833.3	3123.0	± 2221.9	2646.7 (1578.3, 3907.2)	1553.8	± 1202.5	1299.4 (685.8, 1992.9)	< 0.001
OPD visits									
Visited OPD at least once	54	(26.3)	13	(15.9)		41	(33.3)		0.005
no. of OPD visits (*n* = 54)	2.1	± 1.9	2.2	± 2.6	1 (1, 2)	2.1	± 1.6	1 (1, 2)	0.517
ED visits[b]									
Visited ED at least once	20	(9.8)	8	(9.8)		12	(9.8)		1.000
No. of ED visits (*n* = 20)	1.2	± 0.4	1.0	± 0.0	1 (1, 1)	1.3	± 0.5	1 (1, 1.5)	0.386

SPC, specialized palliative care; SD, standard deviation; IQR, interquartile range; LST, life-sustaining treatment; HD, hemodialysis; PD, peritoneal dialysis; IV, intravenous; PO, per oral; CPR, cardiopulmonary resuscitation; ICU, intensive care unit; ED, emergency department; OPD, outpatient department

[a] The proportion of patients who had ever received chemotherapy was calculated using the number of patients with malignancy or hematologic and immunologic condition as a denominator

[b] Cases of ED visits resulted in admission excluded and were categorized as usage of admission

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