

Trends and Status of Hospice Use in South Korea (2018-2022)

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Received: January 26, 2024

Revised: February 29, 2024

Accepted: March 7, 2024

Published online: May 17, 2024

Background: This study assessed nationwide data from South Korea to investigate recent trends in hospice use by terminally ill patients with cancer depending on the type of hospice care and examined the mean duration of such use.

Methods: Data for 2018-2022 were obtained from the National Hospice and Palliative Care (NHPC) registry along with the relevant cause-of-death statistics. Frequencies and trend tests were conducted to analyze the percentage of individuals who used hospice services and evaluate whether the observed use trends were statistically significant. Similarly, analysis of variance and *t*-tests were conducted to determine the mean duration of hospice stay.

Results: The total rate of hospice use by terminally ill patients with cancer was 24.2% in 2022. The overall use rates did not reveal a significant trend. However, the use of inpatient care indicated a decreasing trend, whereas an increasing trend was observed in the employment of home- and consultation-based services. The total mean duration of hospice stay was 27.4 days. No significant changes occurred in overall use during the study period.

Conclusion: Korea is one of the few countries to operate a national registry system for hospice patients; therefore, this study contributes significantly by reporting hospice use and stay duration percentages.

Keywords: Palliative care; Terminal care; Length of stay; Neoplasms

INTRODUCTION

The multidisciplinary approach of hospice care aims to provide medical and supportive care to patients approaching their end-of-life [1]. As hospice care avoids providing intensive care for prolonging life, it focuses primarily on managing symptoms and supporting caregivers while considering patient preferences [2]. Its significance has grown, as reports show that it has a superior ability to manage symptoms, decrease health-care costs, and ensure high levels of patient satisfaction [3-6].

In South Korea, hospice care is provided to terminally ill patients with cancer, AIDS (acquired human immunodeficiency syndrome), COPD

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(chronic obstructive pulmonary disease), chronic liver cirrhosis, and other chronic diseases, with the majority of such patients being those with advanced cancer. Hospice care was introduced and officially covered by the National Health Insurance (NHI) as an inpatient service after conducting rounds of pilot projects in 2015 [7]. Subsequently, hospice care expanded to include home and consultation-based services. Specifically, inpatient hospices offer services in an inpatient setting at a certified medical facility. Professional programs for hospice care, including pain management, symptom management, therapeutic programs, and psychological, social, and spiritual consultation, are provided in a hospital to patients and in appropriate cases, family caregivers. In the case of home hospices, care is provided in the patient's home by employing a visiting hospice care team dispatched from a certified hospital. Consultation-based hospice care is provided in either an inpatient or an outpatient setting to terminally ill patients and also refers candidate patients to receive inpatient hospice care.

Considering the rapid aging population and the consequently increasing number of cancer patients in Korea, the importance of hospice care is growing as it aims to provide appropriate symptom management and higher life satisfaction to terminally ill patients [8]. Hospice services have expanded noticeably in Korea after its introduction as an inpatient service. Home hospices and consultation-based hospices have also been newly added to be reimbursed by the NHI, allowing a larger number of individuals to utilize hospice services. The rate of utilization itself has also more than doubled from its first introduction in terminal cancer patients as more individuals have

become aware of hospice care. However, the rate of increase in utilization has recently halted and areas of improvement still exists as although a larger percentage of individuals consider home as an ideal place to die, only approximately 10% of citizens report dying at home due to deficiencies in the current support system at end-of-life [9]. Yet despite the growing importance of hospice care, no studies have examined the trends and status of hospice care in Korea [10]. Specifically, although few studies have analyzed the utilization rate of hospice services in individual healthcare facilities, national-level research analyzing the trend and pattern of utilization are lacking. As such, this study aimed to investigate recent trends in hospice care utilization among cancer patients based on the type of such care, in addition to the mean length of utilization, by using large nationwide data from the National Hospice and Palliative Care (NHPC) registry.

METHODS

1. Data and study population

This study used relevant data from the NHPC registry for the 2018-2022 period, which is managed by the National Hospice Center of Korea, and the cause-of-death statistics reported by Statistics Korea. The NHPC registry was utilized for identifying cancer patients who received hospice care, as it included information on all end-of-life patients who received hospice care during the chosen period. Cancer patients were included, as they comprise over 99% of hospice users in South Korea; furthermore, inpatient care is only offered to these individuals. Information on patient socio-demographics and physical condi-

tions and the characteristics of their hospice care were recorded in this registry [11]. Cause-of-death statistics were used for measuring the annual number of deaths in the entire South Korean population, as this information was necessary for calculating the annual utilization rate of hospice care or the number of deaths that involved hospice care.

2. Variables

This study presents the 2018-2022 annual hospice care utilization rate and the mean duration of utilization by patients who received hospice care. Annual hospice utilization refers to the number of individuals who used hospice services divided by the number of deceased individuals. As the study population consisted of patients with cancer, deaths caused by cancer based on the International Classification of Diseases 10th Revision (ICD-10) codes C00-C97 were considered. The mean length of utilization refers to the number of days from when a patient is admitted for hospice care to death.

3. Statistical analysis

Hospice utilization and the mean duration of hospice care use by patients were measured annually. Frequencies and trend tests were conducted to analyze the percentage of individuals who utilized hospice services and to test whether observed trends in utilization were statistically significant. Similarly, ANOVA and *t*-tests were conducted to measure the mean length of utilization. Annual changes were presented based on the annual percentage change (APC). A regression analysis was conducted using the log-binary model, where the dependent variable was designated as the number of deaths involved in

hospice care (or the mean length of utilization) and the independent variable per year. The mean percentage change rate during the observation period was measured by applying an exponential function $[(\exp(\beta)-1)\times 100]$ to the calculated regression coefficient. The *p*-values were considered statistically significant at <0.05 . The relevant analyses were conducted using SAS software (ver. 9.4; SAS Institute, Cary, NC, USA).

4. Ethical considerations

The study protocol for the NHPC registry was approved by the Institutional Review Board of the National Cancer Center of Korea (IRB No. NCCNCS 09234). Written informed consent was obtained from the participants or their respective legal guardians. The study was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

General characteristics of the study population are summarized in Table 1. A total of 20,198 cancer patients utilized hospice services in 2022. Inpatient care was the most prevalent type of service ($n=11,799$, 58.4%), followed by consultation-based care ($n=3,385$, 16.8%) and home care ($n=802$, 4.0%). The remaining individuals used two or more types of hospice services: 2,656 (13.1%) received inpatient and consultation-based care, 1,035 (5.1%) received inpatient and home care, 329 (1.6%) received all three types of care, and 192 (1.0%) received home and consultation-based care. Differences were found between individuals who utilized different types of care in the composition of age ($p<0.0001$), sex

Table 1. General characteristics of end-stage cancer patients who utilized hospice care in 2022

	Total	Inpatient	Home	Consultation	Inpatient+home	Inpatient+consultation	Home+consultation	All three	p-value
Age (yr)									
<40	341 (1.7)	151 (1.3)	18 (2.2)	91 (2.7)	22 (2.1)	52 (2.0)	1 (0.5)	6 (1.8)	<0.0001
40-49	983 (4.9)	517 (4.4)	25 (3.1)	215 (6.4)	43 (4.2)	154 (5.8)	8 (4.2)	21 (6.4)	
50-59	2,689 (13.3)	1,470 (12.5)	73 (9.1)	553 (16.3)	105 (10.1)	410 (15.4)	26 (13.5)	52 (15.8)	
60-69	5,158 (25.5)	2,937 (24.9)	165 (20.6)	971 (28.7)	212 (20.5)	741 (27.9)	41 (21.4)	91 (27.7)	
≥70	11,027 (54.6)	6,724 (57.0)	521 (65.0)	1,555 (45.9)	653 (63.1)	1,299 (48.9)	116 (60.4)	159 (48.3)	
Sex									
Male	11,530 (57.1)	6,724 (57.0)	437 (54.5)	2,015 (59.5)	552 (53.3)	1,537 (57.9)	97 (50.5)	168 (51.1)	0.0003
Female	8,668 (42.9)	5,075 (43.0)	365 (45.5)	1,370 (40.5)	483 (46.7)	1,119 (42.1)	95 (49.5)	161 (48.9)	
Region									
Capital area	8,181 (40.5)	4,575 (38.8)	355 (44.3)	1,446 (42.7)	585 (56.5)	993 (37.4)	75 (39.1)	152 (46.2)	<0.0001
Metropolitan	6,268 (31.0)	3,226 (27.3)	257 (32.0)	1,191 (35.2)	235 (22.7)	1,087 (40.9)	110 (57.3)	162 (49.2)	
Rural	5,749 (28.5)	3,998 (33.9)	190 (23.7)	748 (22.1)	215 (20.8)	576 (21.7)	7 (3.6)	15 (4.6)	
Type of healthcare insurance									
National Health Insurance	18,354 (90.9)	10,641 (90.2)	755 (94.1)	3,073 (90.8)	981 (94.8)	2,406 (90.6)	185 (96.4)	313 (95.1)	<0.0001
Medical Aid	1,844 (9.1)	1,158 (9.8)	47 (5.9)	312 (9.2)	54 (5.2)	250 (9.4)	7 (3.6)	16 (4.9)	
Marital status									
Married	13,227 (65.5)	7,471 (63.3)	526 (65.6)	2,367 (69.9)	693 (67.0)	1,808 (68.1)	133 (69.3)	229 (69.6)	<0.0001
Divorced/bereaved/separated	5,928 (29.3)	3,742 (31.7)	242 (30.2)	806 (23.8)	307 (29.7)	693 (26.1)	56 (29.2)	82 (24.9)	
Single	1,043 (5.2)	586 (5.0)	34 (4.2)	212 (6.3)	35 (3.4)	155 (5.8)	3 (1.6)	18 (5.5)	
Primary caregiver									
Family	18,479 (91.5)	10,655 (90.3)	756 (94.3)	3,137 (92.7)	971 (93.8)	2,458 (92.5)	184 (95.8)	318 (96.7)	<0.0001
Other	1,719 (8.5)	1,144 (9.7)	46 (5.7)	248 (7.3)	64 (6.2)	198 (7.5)	8 (4.2)	11 (3.3)	
Type of cancer									
Lung cancer	3,678 (18.2)	2,197 (18.6)	136 (17.0)	648 (19.1)	170 (16.4)	450 (16.9)	28 (14.6)	49 (14.9)	<0.0001
Liver cancer	2,342 (11.6)	1,416 (12.0)	82 (10.2)	397 (11.7)	94 (9.1)	300 (11.3)	23 (12.0)	30 (9.1)	
Colorectal cancer	1,889 (9.4)	1,142 (9.7)	85 (10.6)	253 (7.5)	99 (9.6)	258 (9.7)	19 (9.9)	33 (10.0)	
Pancreas cancer	2,411 (11.9)	1,382 (11.7)	108 (13.5)	387 (11.4)	130 (12.6)	316 (11.9)	35 (18.2)	53 (16.1)	
Gastric cancer	2,330 (11.5)	1,392 (11.8)	107 (13.3)	301 (8.9)	137 (13.2)	331 (12.5)	23 (12.0)	39 (11.9)	
Other cancer	7,548 (37.4)	4,270 (36.2)	284 (35.4)	1,399 (41.3)	405 (39.1)	1,001 (37.7)	64 (33.3)	125 (38.0)	
Patient awareness of terminal illness									
Yes	2,770 (13.7)	1,678 (14.2)	140 (17.5)	484 (14.3)	140 (13.5)	287 (10.8)	19 (9.9)	22 (6.7)	<0.0001
No	17,428 (86.3)	10,121 (85.8)	662 (82.5)	2,901 (85.7)	895 (86.5)	2,369 (89.2)	173 (90.1)	307 (93.3)	
Level of consciousness									
Alert	14,307 (70.8)	8,282 (70.2)	601 (74.9)	2,005 (59.2)	897 (86.7)	2,048 (77.1)	168 (87.5)	306 (93.0)	<0.0001
Drowsy	4,204 (20.8)	2,423 (20.5)	159 (19.8)	947 (28.0)	112 (10.8)	521 (19.6)	22 (11.5)	20 (6.1)	
Stupor	1,456 (7.2)	959 (8.1)	33 (4.1)	361 (10.7)	18 (1.7)	80 (3.0)	2 (1.0)	3 (0.9)	
Coma	231 (1.1)	135 (1.1)	9 (1.1)	72 (2.1)	8 (0.8)	7 (0.3)	0 (0.0)	0 (0.0)	
Total	20,198 (100.0)	11,799 (58.4)	802 (4.0)	3,385 (16.8)	1,035 (5.1)	2,856 (13.1)	192 (1.0)	329 (1.6)	

Values are presented as number (%).

($p=0.0003$), region ($p<0.0001$), healthcare insurance ($p<0.0001$), marital status ($p<0.0001$), primary caregiver ($p<0.0001$), type of cancer ($p<0.0001$), awareness status of terminal illness ($p<0.0001$), and level of consciousness ($p<0.0001$).

The trends in hospice utilization are shown in Figure 1. The rate of hospice utilization in terminally ill patients with cancer was 22.9% in 2018, 24.3% in 2019, 23.0% in 2020, 23.2% in 2021, and 24.2% in 2022. Overall, utilization rates did not show a statistically significant trend (APC=0.6, $p=0.559$). In the analysis of the utilization rates based on type of hospice care, inpatient care utilization rates showed a decreasing trend (APC=-5.4, $p=0.055$), whereas

consultation-based (APC=18.5, $p=0.009$) and home services utilization rates showed an escalating trend (APC=13.6, $p<0.001$). The use of inpatient and consultation-based services also increased (APC=13.8, $p=0.044$). No statistical significance was found for other types of care.

Total mean length of hospice utilization was 27.4±44.4 days (mean±SD) in 2022, as shown in Figure 2. The mean length of utilization tended to be higher in individuals who used two or more types of hospice services (all three types: 80.0±79.2 days; inpatient+home: 62.3±78.3 days; home+consultation: 54.6±75.3 days; inpatient+consultation: 33.3±44.9 days) than that among those who used a single type of

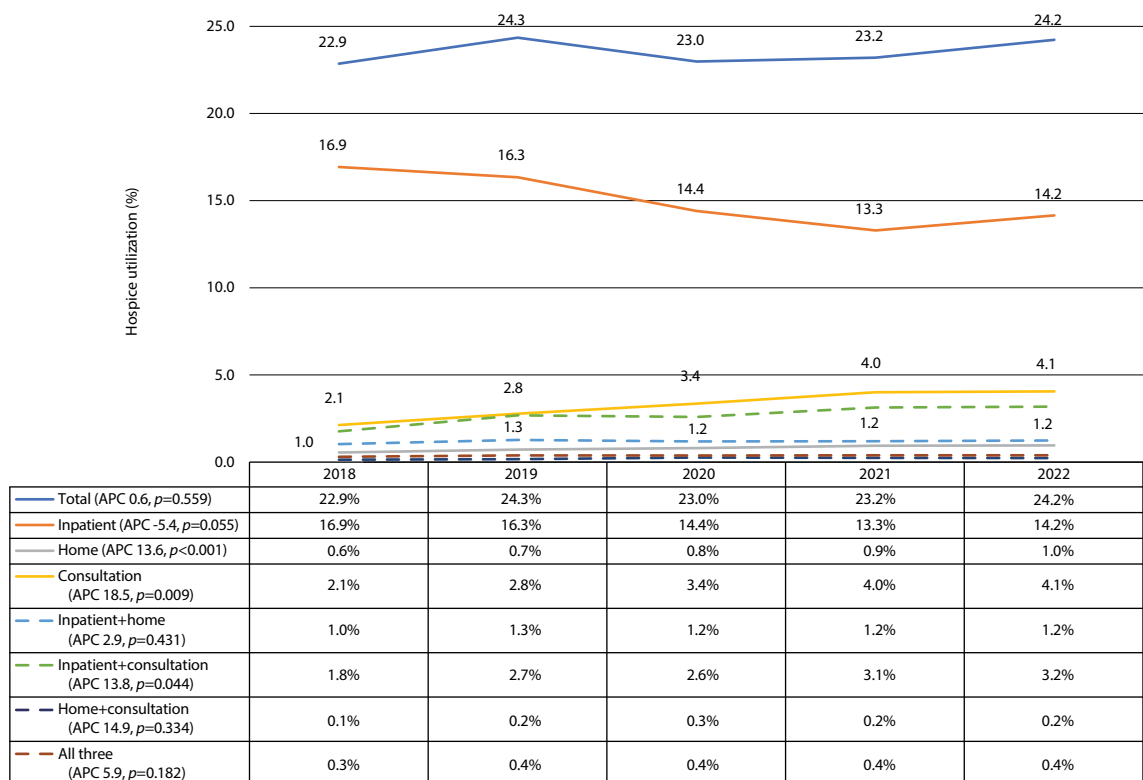


Figure 1. Hospice utilization by year and annual percentage change (APC).

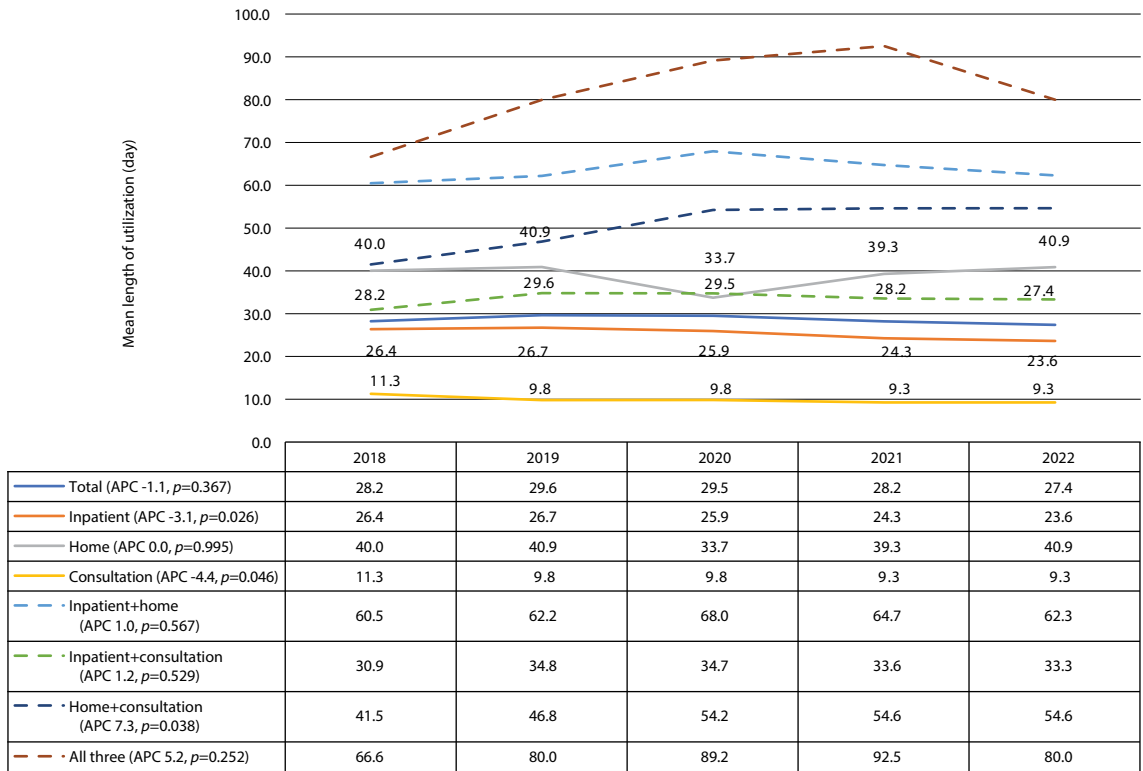


Figure 2. Mean length of hospice utilization by year and annual percentage change (APC).

service (home: 40.9 ± 82.5 days; inpatient: 23.6 ± 33.3 days; consultation: 9.3 ± 26.6 days). The overall length of utilization did not show a statistically significant change between 2018 and 2022 (APC=-1.1, $p=0.367$) but tended to decrease for inpatient (APC=-3.1, $p=0.026$) and consultation-based services (APC=-4.4, $p=0.046$) and increase for home plus consultation-based services (APC=7.3, $p=0.038$).

DISCUSSION

The results showed that there were no significant changes in hospice utilization in patients with cancer

between 2018 and 2022. However, in terms of service type, the utilization of inpatient services showed a decreasing trend, whereas that of consultation-based and home services showed an escalating trend. An escalating trend was also observed in those who used both inpatient and consultation-based services. Additionally, most individuals were found to use a single type of hospice service, where inpatient services were the most prevalent, followed by consultation-based and home services. These findings are understandable, considering that hospice care was first introduced as an inpatient service, being the most commonly offered service by certified healthcare institutions. No significant dif-

ference was found in the general length of hospice utilization between 2018 and 2022. However, a decreasing trend was observed for inpatient and consultation-based services. The mean duration of utilization also increased in patients who used both home and consultation-based services. Among the patients who received a single type of hospice care, those utilizing home care had the longest mean length of utilization, followed by those receiving inpatient and consultation-based care. Additionally, individuals who received two or more types of services generally used hospice services for longer periods, particularly those who used all three types of services. This tendency may have resulted as whilst inpatient care is generally suggested to be provided for a certain length of time, no such recommendation exists for home care. With regard to consultation-based services, length of utilization may have been shorter as it often serves as a bridge in accessing inpatient care for patients waiting admission.

As the key characteristics of hospice services, including patient eligibility and offered services, differ by country, a limitation exists in comparing the findings with that of previous studies. However, the rate of hospice utilization has been reported in previous studies. For instance, in the United States, statistics are available for Medicare beneficiaries, which include individuals aged 65 years or older. The rate of hospice utilization was reported to be 47.3% in 2021 [12]. The comparatively higher rate of utilization may be a reflection of the fact that the Medicare program for hospice care encompasses a much wider range of diseases, such as dementia, and largely centers on home care [12]. Patient eligibility for hospice care was also wider in England as terminally ill patients with cancer, dementia, cardiovascular disease,

or respiratory diseases are eligible to receive care [13]. Reports show that 4.4% of terminally ill individuals who died the cited diseases used hospice services in 2021 [13]. Comparison of the mean length of utilization is difficult as whilst reported as 92.1 days for Medicare beneficiaries, this statistic is unreported in most other countries [14]. As Korea is one of the few countries to operate a national registry system for the entire patients registered for hospice care, this study is the first to allow a comparison in the percentage of hospice utilizations and lengths of stay using verifiable nationwide data with other countries. The findings show that noticeable differences exist in the rate of hospice utilization by countries and the need to share statistics on hospice utilization as access to high-quality hospice care is an important public health concern, especially in many countries facing an aging population [15].

The findings of this study offer important insights. When hospice care was first reimbursed by the NHI as an inpatient-based service in 2015, its utilization rate was approximately 15.0% [16]. Utilization rate of hospice services has continuously increased to reach 24.3% in 2019 but since then has slightly halted, not revealing a significant trend in recent years. Such tendencies are a summation of the decrease in the use of inpatient hospice services and increase in the use of home and consultation-based services. Specifically, a reduction in the use of inpatient hospice units have been found in years 2020 to 2022 due to the coronavirus disease 2019 (COVID-19) outbreak in which hospitals were unable to provide inpatient care as they operated isolation wards instead. At the same time, the use of home and consultation-based services tended to increase as a substitute for inpatient care during this time period, in

addition to these types of services being officially reimbursed by the NHI in 2020 and 2022, respectively. Previous literature has also revealed that the introduction of home services was associated an increase in the number of cancer patients dying in their homes, suggesting an escalation in the use of home services among terminally ill cancer patients [17]. Regarding consultation-based care, considering that this service delivers hospice care to patients who prefer not to be admitted to a hospital ward or are waiting admission, its increasing utilization reflects its potentially significant role in the provision of hospice services in health-care facilities without a hospice ward or in serving as a bridge to facilitate access to inpatient care [18]. The fact that the number of patients who used both inpatient and consultation-based services showed an escalating trend during the study period reinforces the role of consultation-based services in transferring patients to inpatient care, suggesting the need to prepare for the potentially growing demand for consultation-based care in the future. The changes in the mean length of hospice utilization also echoes this tendency as whereas the length of inpatient services decreased slightly, that of home and consultation-based services did not show significant alterations. This shows changes in the type of hospice care patients prefer in recent years as an increasing number of patients wish to spend their end-of-life and die at home, inferring that policies should focus on expanding the number of healthcare facilities providing home care [17].

At the same time, the fact that the overall use of hospice care has not shown any significant fluctuation recently despite the recent pandemic infers that terminally ill patients likely require hospice services during their end-of-life stage. Moreover, total utiliza-

tion rate increased slightly in 2022 when the pandemic comparatively subdued, nearly reaching pre-COVID-19 outbreak rates measured in 2019. Such findings are important as hospice services provide terminally ill patients and family caregivers with comprehensive care, improving the quality of end-of-life care [19]. It also infers a positive awareness and demand for hospice care when the absolute number of terminally ill patients with cancer likely increase due to population aging. Yet the utilization rate of hospice services in Korea is not noticeably high compared to other countries, although direct comparisons cannot be made as policies and measures related to the reporting of utilization differ by country. This implies the need to increase the number of healthcare institutions providing inpatient, home, and consultation-based hospice care so that patients can easily access their preferred type of hospice service. Specifically, as a far fewer number of institutions provide home or consultation-based care than inpatient care, supposedly as hospice care was first introduced as an inpatient service, health policies supporting the expansion of hospitals providing such care need to be strengthened by possibly increasing financial support by the government or reimbursement by the NHI. The current geographical distribution of facilities should also be accounted for in expanding the number of healthcare institutions as the number of patients who utilize inpatient facilities located at their residing region differs between approximately 26% to 97% according to province (or metropolitan city) [16]. As hospice care needs to be easily accessible nearby, the number of professional institutions needs to be increased while accounting for the current geographical distribution of facilities

[7]. A continuous promotion of and education on hospice care will also be crucial to improve public acceptance and awareness so that the quality of life of needed patients and their families can be improved.

This study has some limitations. As the NHPC data included information on only terminally ill patients receiving hospice care, information on the characteristics of individuals who died without receiving hospice care were unavailable. Hence, their sociodemographic and clinical characteristics could not be compared with those who utilized hospice services. Future research is needed using data that contains the sociodemographic and clinical factors of terminally ill cancer patients who both utilized and did not utilize hospice services to investigate potential differences in the characteristics between the two groups. The results should also be interpreted after considering that the individuals who used hospice services were patients with cancer, likely because hospice services were first introduced for patients with cancer in South Korea. As the fastest growing sector of hospice care in many countries is non-cancer illnesses, the findings indicate the importance of enlarging this segment of hospice patients. After utilization increases in this group of patients, patterns of hospice utilization should be analyzed.

In conclusion, significant changes were not observed in hospice utilization between 2018 and 2022. In terms of service type, the utilization of inpatient services decreased, whereas that of consultation-based and home services increased. Most patients used inpatient services, followed by consultation-based services and home services. Similarly, the mean length of service utilization did not fluctuate significantly, with patients receiving home care having the longest length of

utilization, followed by those receiving inpatient and consultation-based care.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

ACKNOWLEDGMENTS

This study was supported by a National Cancer Center grant (NCC-2211830-3).

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