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Original Article

Place of death for hospice-cared terminal patients with cancer: A nationwide retrospective study in Taiwan

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Abstract

Background: Hospice care has been part of the Taiwan health-care system for 20 years. Detailed information on the place of death for terminal cancer patients is lacking. Impending death discharge (IDD) is unique in Taiwan, and our study aims to compare IDD with in-hospice death among terminal cancer patients under hospice care.
Methods: This retrospective study used claims data of decedents of cancer from the National Health Insurance Research Database of Taiwan from 2007 to 2010.
Results: Of the 22,720 cancer decedents enrolled, 6316 had claims data marked with IDD and 16,404 with in-hospice death. Those with IDD were older; had a shorter hospice stay; and higher rates of gastrointestinal, peritoneal, and pulmonary cancers. The mean daily health-care expenditure was higher in those with IDD, however, the total expenditure of terminal hospice admission was lower than those dying in hospices. Patients who were treated at public hospitals had a higher rate of in-hospice death than those treated at private hospitals. Patients with IDD were positively correlated with increasing age and shorter hospice stay. Patients with IDD were positively correlated with private hospitals, especially religious corporation-based hospitals. Male sex, oropharyngeal cancer, bone/connective/breast cancers, and secondary/metastatic cancers were negatively correlated with IDD.
Conclusion: Patients with IDD have characteristics distinct from those dying in hospices. Advanced age and short hospice stays were common in those with IDD, and in-depth investigations were needed. As a unique predying process in Taiwan, relevant health-care issues regarding IDD are warranted for further investigations.

Keywords: hospices; length of stay; neoplasms; palliative care; patient discharge

1. Introduction

Since the first hospice was established in the United Kingdom in the late 1960s, the use of hospice and palliative care has become popular worldwide. In developed countries, hospice and palliative care are now used for services ranging from in-patient to community/home care.[1,2] The place of death is an important issue for terminally ill patients, and evidence-

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based research has shown that dying at home is considered to improve the general quality of care.[3–5]

Hospice care was introduced in Taiwan in the late 1980s, and has been covered by the National Health Insurance (NHI) program since 2000. In Taiwan, the model of palliative care differs from that used in Western countries. None of the hospices in Taiwan are independent institutions, but are rather affiliated with general hospitals, similar to palliative care units of hospitals in the West. At present, there are around 53 hospices with 718 in-patient beds in Taiwan.[6] Cancer patients account for the majority of terminal patients under hospice care, even though the NHI has provided in-patient reimbursements for noncancer hospice care since 2009.[7] The place of death is recorded for all terminal patients admitted to hospices. However, detailed information on the place of death for terminal cancer patients has not previously been reported. Choosing impending death discharge (IDD) is a unique predying behavior for terminal patients in Taiwan. According to traditional culture, out-of-home death is thought to bring bad luck for the deceased in the afterlife, whereas dying at home and being cared for by younger family members is thought to bring good fortune.[8,9] An epidemiological study in Taiwan that reviewed death certificates found that approximately 97% of out-of-hospital cancer-related deaths occurred at the patient's home.[10] Thus, an IDD code in the National Health Insurance Research Database (NHIRD) can be considered to indicate dying at home. Therefore, the aim of this study was to investigate differences between terminal cancer patients with IDD and those who died in hospices.

2. Methods

This retrospective study collected data on patients who died from cancer whose NHI claims records were marked with hospice care from the NHIRD in Taiwan from 2007 to 2010. The NHIRD is maintained by the National Health Research Institute of Taiwan, and provides anonymized and encrypted data for research purposes.[11] In this study, we screened in-patient claims data in the NHIRD from 2007 to 2010. The terminal admission claims data marked with "4" (expired, died in a hospice) and "A" (IDD) were collected. Claims data before 2007 were not analyzed because of incomplete information (Fig. 1).

The types of cancer were classified according to the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes as follows: oropharyngeal cancer (ICD-9-CM 140-149), gastrointestinal/peritoneal cancers (ICD-9-CM 150-159), pulmonary cancers (ICD-9-CM 160-169), bone/connective tissue/breast cancers (ICD-9-CM 170-175), genitourinary cancers (ICD-9-CM 179-189), hematologic cancers (ICD-9-CM 200-208), other primary cancers (ICD-9-CM 190-195,199), and secondary/metastatic cancers (ICD-9-CM 196-198).

In the NHIRD, the hospital departments where patients are treated are recorded. However, palliative care is not included, and the departments responsible for terminal hospice admissions include family medicine, oncology/hematology, internal medicine, radiation oncology, and other sections.

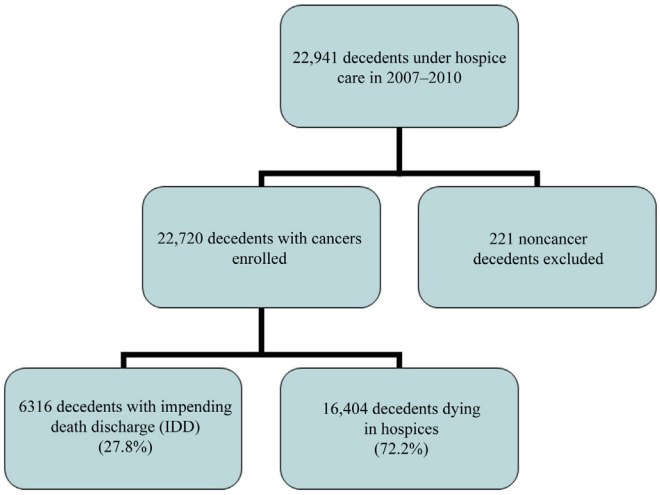

Fig. 1. Study design.

The cost of terminal hospice admissions is calculated in New Taiwan Dollars, with the exchange rate to United States Dollars being 29.35 on December 31, 2010. The types of hospice are classified in the NHIRD according to the nature of the administrative authority rather than by the health-care level. Public hospitals include the Department of Health (DOH) and municipal hospitals, national university-affiliated hospitals, military hospitals, and veterans' hospitals. Private hospitals include private/enterprise corporation hospitals, religious-based corporation hospitals, and private university-affiliated hospitals. The NHRI approved this study's protocol (No. 100257).

2.1. Statistical analysis

Data were expressed as mean ± standard deviation or percentage (%). SPSS software (IBM SPSS version 22.0, SPSS, Inc., Chicago, IL, USA) was used for all statistical analyses. For descriptive statistics, independent t test, Chi-square test, Chi-square test for trend, and binary logistic regression analysis were performed. The correlated factors were presented as odds ratio (OR) and 95% confidence interval, after adjusting for each variable. Statistical significance was set at $p < 0.05$.

3. Results

From 2007 to 2010, 22,720 patients who died from cancer and received hospice care were enrolled, including 6316 with IDD and 16,404 who died in a hospice. The numbers in both groups increased annually over the study period, with the relative percentage of patients with IDD increasing more markedly than those dying in hospices (from 23.4% to 30.1%). The trend of the percentage for patients' place of death is shown in Fig. 2.

The general information of the patients and the types of cancer are shown in Table 1. Most of the patients in both groups were aged between 60 years and 79 years. Patients with IDD had an older mean age than those who died in a hospice,