Effectiveness of Home Care in Reducing Emergency Department Visits by End-Stage Palliative Care Patients in the Armed Forces Hospital – Southern Region, Saudi Arabia: A Retrospective Cohort Study

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Abstract

Objectives: To assess home healthcare services' effectiveness in reducing emergency department visits (ED) and subsequent hospital readmission rates.

Methods: A file-based hospital-based retrospective cohort study with an analytical component was conducted to compare palliative patients under home care services (Study Group) with a matched group of palliative patients who were not under home care services (Control Group). Demographic data, ED visits, and hospital readmission rates were calculated.

Results: Both groups were diagnosis-, age-, and sex-matched. There was a highly significant difference regarding ED visits, as those in the Home Care (Study) group had significantly fewer ED visits and substantially fewer hospital admissions than patients in the non-home care (Control) group.

Conclusions: Home Care services can effectively reduce ED visits and hospital admissions for end-stage palliative care patients.

Keywords: Home Care, Palliative care, Emergency Department visits, Hospital admission

Introduction

One of the main principles for managing palliative-care patients and their caregivers is to deliver a high-quality integrated healthcare service (1). However, several studies suggested that the outcome of palliative care to end-of-life patients at their homes could be even better than hospital care, and end-of-life patients prefer their homes as their place of death (2-4).

Developing and utilizing integrated home care services is crucial for end-stage palliative care patients and their caregivers. Moreover, reducing any potentially avoidable ED admissions is necessary to enhance their healthcare experience and improve cost-effectiveness (5).

It has been shown that unnecessary emergency department (ED) visits and frequent hospital admissions constitute major concerns and worries for palliative care patients and their families (6), and is an indicator of poor palliative care (7). Therefore, minimizing excessive visits to EDs or hospital admissions is important to increase their comfort (8).

A significant number of ER visits by cancer patients during the end-of-life period can be avoided by home care services. Moreover, it has been emphasized that almost half of potentially avoidable ED visits by end-of-life patients can be omitted. Therefore, there is an urgent need to minimize unnecessary ED and/or hospital admissions (9-11).

Moreover, hospitalized palliative care patients sustain much greater costs than those managed at home, stressing the need to avoid unnecessary hospitalizations (12). However, there is scarce information from developing nations regarding the effectiveness of home care services in reducing EDs' visits by end-stage palliative care patients. Therefore, this study aimed to assess the effectiveness of home healthcare services in reducing ED visits and hospital admission rates.

Subject and Method

This study was conducted at the "Home Health Care Department", in the Armed Forces Hospitals - Southern Region (AFHSR), Saudi Arabia. Data were collected during 2023. A file-based retrospective cohort study was conducted to compare palliative patients under home care services with a matched control group of palliative patients who were not under home care services.

Operational definitions

• **Palliative care:** An approach that improves the quality of life of patients (adults and children) and their families who are facing problems associated with life-threatening illness. It prevents and relieves suffering through early identification, correct assessment, and treatment of pain and other problems, whether physical, psychosocial, or spiritual.

• **Home healthcare services:** A wide range of healthcare services that can be given in a patient's home for an illness or injury. Home healthcare is usually less expensive, more convenient, and just as effective as care provided in a hospital or skilled nursing facility.

The study group included all patients during 2023 under the umbrella of home palliative care services (n=80), while the control group included diagnosis-, age-, and sex-matched palliative care patients who were not under home care services (n=80). The data of those who died during the study period (2023) were excluded.

Data were obtained by file-based review of eligible patients regarding their personal characteristics, and diagnoses, in addition to ED visits and hospital readmission.

Statistical analysis

Data were analyzed using the Statistical Package of Social Sciences [IBM, SPSS, version 23]. The normality of data was assessed with a one-sample Kolmogorov-Smirnov test. Qualitative data were described as frequencies and percentages, while the association between categorical variables was tested using the □2-test (or Fisher's Exact test), accordingly. Quantitative data were expressed as mean and standard deviation, while the independent sample t-test was used for comparison of groups. The results were considered statistically significant when $p \leq 0.05$.

Study protocol was approved by Research Ethics Committee of AFHSR. [Code number: AFHSRMREC/2024/HOME HEALTH CARE/730]. Managerial approvals were obtained to collect data. All collected data were treated with confidentiality and were used only for research purposes.

Results

Table (1) shows that the mean age of studied participants was 77.38±11.13 years for home care palliative patients and 74.98±9.5 years for the control group with no significant difference. Also, there was no gender distribution difference between groups.

Table (2) demonstrates the original diagnoses for the studied groups. The most common were brain and spine cancer, hepatobiliary cancer, and gastrointestinal cancer. However, there were no significant differences between the studied groups.

Table (3) shows that there were statistically significant differences between both groups regarding their ED visits and hospital readmissions, being significant among palliative patients under the home care umbrella ($p<0.001$).

Table 1: Characteristics of studied groups

Personal Characteristics	Home Care		Non-Home Care		Test of Significance
	No.	%	No.	%	
Gender					
• Male	40	50.0	44	55.0	χ^2=0.4; P= 0.52
• Female	40	50.0	36	45.0	
Age (Mean±SD)	77.38±11.13 years		74.98±9.50 years		t=1.46; P 0.14

Table 2 Primary diagnoses of the studied groups

Diagnoses	Home Care		Non-Home Care		P value
	No.	%	No.	%	
Brain/Spine cancer	20	25	14	17.5	0.57
Hepatobiliary cancer	13	16.25	14	17.5	0.83
Gastrointestinal cancer	6	7.5	7	8.75	0.24
Prostatic cancer	6	7.5	8	10.0	0.58
Leukemia	8	10	5	6.25	0.38
Gastric cancer	5	6.25	7	8.75	0.54
Breast cancer	6	7.5	3	3.75	0.3
Pancreatic cancer	3	3.75	6	7.5	0.3
Uterine cancer	4	5.0	3	3.75	0.67
Thyroid cancer	2	2.5	1	1.25	0.56
Renal cancer	1	1.25	2	2.5	0.56
Bladder cancer	1	1.25	3	3.75	0.31
Peritoneal cancer	0	0.0	2	2.5	0.15
Skin cancer	1	1.25	1	1.25	1.0
Nasopharyngeal cancer	1	1.25	1	1.25	1.0
Lung cancer	1	1.25	1	1.25	1.0
Ovarian cancer	1	1.25	0	0.0	0.31
Cervical cancer	0	0.0	1	1.25	0.31
Testicular cancer	0	0.0	1	1.25	0.31
Supraglottic cancer	1	1.25	0	0.0	0.31

Table 3 Comparison of ED visits and hospital admissions

	Home Care	Non-Home Care	Tests of Significance
No. of ER visits	1.52±1.34	4.22±3.15	t=7.03; P<0.001†
No. of hospital readmissions	0.98± 1.1	3.52± 3.43	t=13.3; P<0.001†

† Statistically significant

Discussion

Providing palliative care at home preserves the dignity of terminally ill patients and allows them to spend the final period of their lives in their own homes, together with relatives who can offer them more empathetic support. Quality of life is closely related to the chance to stay close to loved ones, to reduce the loneliness typical of all forms of hospitalization. The literature consistently demonstrates that most terminally ill patients would prefer to stay and die at home. (13). However, in the Kingdom of Saudi Arabia (KSA), the integration of palliative care services is still a new concept that has been significantly growing over the past few decades (14).

The present study aimed to explore whether home healthcare services are effective in reducing the ED's visits and hospital readmission.

Results of the present study indicate the effectiveness of home care services in reducing the use of hospital resources in the form of ED visits and hospital readmissions by end-stage palliative care patients.

These findings are consistent with those reported by other studies conducted in developed countries, which stressed that potentially avoidable ED visits comprise about 20-50% of total ED visits by palliative care patients, hence the need to reduce avoidable admissions amongst palliative care patients is beneficial from both quality-of-care and socio-economic perspectives (10; 15-16).

Furthermore, home care is also an efficient service since the majority of cancer patients receive aggressive palliative care and sustain significantly higher costs than those managed non-aggressively, reflecting the need for appropriate treatment and avoiding unnecessary hospital-based visits (17). Dumont et al. noted that hospitalization of end-of-life patients constitutes the greatest cost of healthcare, accounting, on average for 33.2% of the total cost per patient (18). However, despite the high cost of admissions for palliative care patients, it has been reported that their in-hospital care was frequently inappropriate to the patients and/or their families, with inadequate symptom control, a higher likelihood of receiving unwarranted medications, and a worse quality for end-of-life (19).

However, this study had some potential limitations. Firstly, this study followed a file-based retrospective research design, which is possibly associated with missing data and confounding variables related to patients' health conditions. Moreover, this is a single-center study (i.e., the AFHSR), which may limit the generalizability of its results.

In conclusion, home health care services are very effective in reducing ED visits and Hospital readmission for palliative care patients and in consequence reducing the effort and economic burden in health facilities.

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