

Regardless of the pathology for which the service was initially activated, patients being cared for by the Home Care Nursing Service (HCNS) have fewer medical hospitalisations, with shorter hospital stays. Experimental study on paired sample groups.

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Abstract

While there is almost unanimous agreement in the scientific literature that home care nursing improves the quality of life of elderly patients, evaluations differ as to the reduction of repeat hospitalisations. The aim of this experimental study on paired sample groups is to evaluate if the persons being cared for by the Home Care Nursing Service (HCNS) have fewer medical hospitalisations and if the duration of hospitalisations is likewise reduced, regardless of the pathology for which HCNS was initially activated and the age of the patients involved. The population consisted of 3,263 continuous HCNS patients in 2005. The sample group was based on new HCNS patients in 2005, excluding those who died during the course of that year. This group was then randomised in order to obtain a sample group of 150 patients. The data was gathered in July 2007 on special computer forms using the “integrated healthcare applications data system” of the Friuli Venezia Giulia Region, in order to obtain the number of medical hospitalisations and days of hospitalisation during the year prior to HCNS treatment and for the year in which HCNS treatment was activated. Comparing the data for the two years shows that the overall number of medical hospitalisations was reduced by 56.95%, while the total number of days of hospitalisation declined from 1197 to 727, for a reduction of 39.26%. The theoretical cost evaluated in DRGs was reduced by 57.47%. The study shows that HCNS is a “protective factor” regardless of the pathology of activation and age, and that it significantly reduces hospitalisations and length of hospitalisation.

key words: case management, home care, discharge programme, hospital readmissions, benefits, cost, nurse, reduce hospitalisation.

Introduction

While the scientific literature is in agreement that home care nursing improves the quality of life of elderly patients, there is disagreement concerning the reduction of hospitalisations.^{1 2} As regards the

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research studies on the reduction of hospitalisations, it is often unclear whether the care model is of a services delivery only or comprehensive care type. The present research intends to show that the comprehensive care model, as practised by the community nurses of A.S.S. n.1 Triestina (Healthcare Services Agency), and in particular by the Home Care Nursing Service, reduces notably the phenomenon of repeat hospitalisations of patients, regardless of their pathology or age. The bibliographical research was carried out by starting with COCHRANE systematic revisions and, subsequently, CINHALL and MEDLINE. The selection criteria were relevance to the research theme and the availability of English language abstracts. The key words used for the various data banks were: *case management, home care, discharge programme, hospital readmissions, benefits, cost, nurse, reduce hospitalisation.*

Goals

The experimental study on pair sample groups intended to evaluate whether HCNS patients, as opposed to patients not receiving this service, showed a reduction in the number of medical hospitalisations and the duration of hospitalisation, regardless of the pathology which activated the service and the age of the patients involved.

Materials and methods

The reference population consisted of 3,262 patients receiving continuous HCNS care during 2005. To obtain the sample group, the new recipients of this service were identified (2199 patients); after excluding those patients who died during the course of the year, a reference population of 1946 patients was obtained. Of these, 440 had been receiving continuous HCNS care for at least a year. After simple random sampling,⁴ a sample group of 150 patients was obtained. The sample group consisted of 60 males and 90 females; the average age was 78.8 years ($\pm 15,86$), with a mode of 85 years and a mean of 83 years. The total age range was from 6 to 101 years. The distribution by age was normal except for two cases of 6 and 7 years.

More specifically, 88% of the group was over 65 and was composed of 49 men (37%) and 83 women (63%), of which 56% widows.

The sample group reflected perfectly the population being assisted by the HCNS during 2005 (3263 persons), also in terms of distribution by gender (table n.1).

⁴ The calculation programme EpiCalc2000.doc was used.

Table n.1	age = > 65 years	men	women
Italy	11.592.335 persons 20,00%	41,60%	58,40%
Province of Trieste	64.299 persons 27,00%	39,00%	61,00%
Population continuous HCNS	3263 persons 88,00%	37%	63%
Research sample	150 persons 88,00%	37%	63%

The data were gathered in July, 2007 on a special computerised form using the “integrated healthcare data applications” of the FVG Region in order to identify the primary clinical diagnosis and number and length of medical hospitalisations in the year prior to activation of HCNS, and during the year HCNS care was activated (2005-2006).

The data included: Regional Care Code for each patient; date on which patient began receiving continuous HCNS care; number of nursing visits during period of HCNS care; number of hospitalisations during the periods in question. The indicators for analysis are the number of hospitalisations and days of hospitalisation in the 12 months before the start of HCNS care, and during the 12 months of HCNS care.

The statistical analyses were performed using Epi Info 3.4 software and the calculators on the website <http://www.evidencebasednursing.it/calcolatori/calcolatoriEBN.htm>. The analyses were carried out on:

the data-form consisting of an Excel spreadsheet in which every line corresponded to the record of a patient, numbered progressively, and each column contained one of the variables being considered.

Results

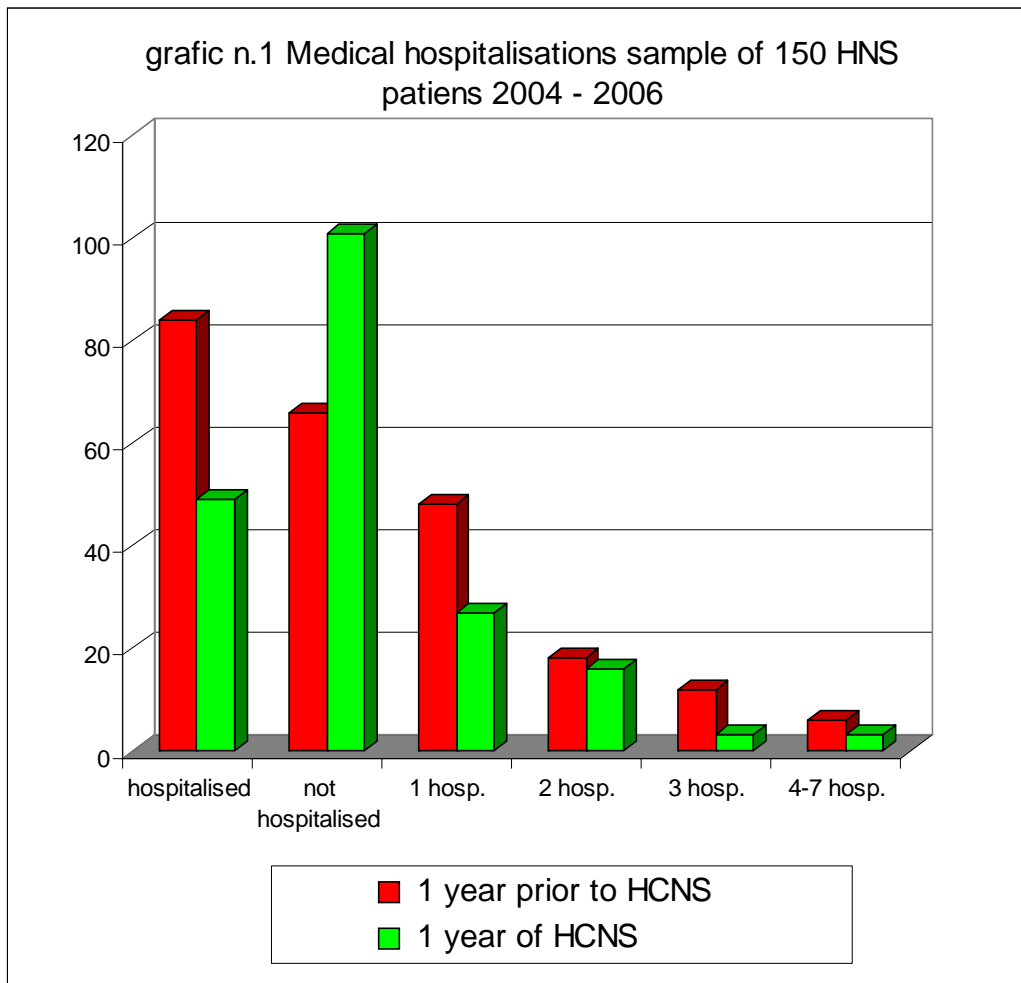
In the year prior to the start of HCNS care, 56% of patients required one or more medical hospitalisations, with an average of 14.25 days of hospitalisation per patient (13.31 days if patients not requiring hospitalisation are factored in) with a cost of 4,531.567€ per patient (including patients not requiring hospitalisation). The average length of 151 hospitalisations (including patients hospitalised more than once) was 7.92 days. As Graph n. 1 indicates, of the 84 persons hospitalised, 18 patients were hospitalised twice, 12 patients 3 times, and 6 patients from 4 to 7 times during the year prior to HCNS care.

During the year of HCNS care, the percentage of patients requiring hospitalisation declined to 32.67%, with an average of 14.83 days of hospitalisation per patient (4.84 days if patients not

requiring hospitalisation are factored in), for an average cost of hospitalisation for the group, including non-hospitalised patients, of 1,926.91€ per person (see Table n. 2).

	N° hospitalised patients	n° hospitalisations	Average n. hospitalisations	Days of hospitalisation	Average n. days	Cost in € equivalent, DRG	Average cost € per patient
12 months before	84	151	1	1197	13,31	679.735	4.531,57
12 months HCNS	49	65	0,43	727	4,84	289.037	1.926,91

The total number of medical hospitalisations fell from 151 to 65, for a reduction of 56.95%, while the number of patients requiring hospitalisation fell from 84 to 49. The R.R. was 0.58 (95% I.C. 0.44-0.76) . The average length of the 65 hospitalisations (including patients hospitalised only once) was 11.18 days. Of the 49 patients requiring hospitalisation, due to the worsening of their pathologies, 3 patients were hospitalised 4 to 5 times, 3 patients 3 times and 16 patients 2 times (Graphic n.1).



Discussion

HCNS care is comprehensive and “habilitating”, and an indicator of the effectiveness of this home care model can be found in the reduction of hospitalisations. The results of the present research demonstrate that HCNS care is effective regardless of the pathologies involved or the age of patients. The number of patients requiring hospitalisation fell 41.67% during the period of HCNS care (35 patients fewer with respect to the 84 patients of the previous period). The percentage of patients who required at least one hospitalisation fell from 56% (84 patients) to 32,7% (49 patients), with an incidence of hospitalisation that fell from 151 to 65. The number of days of hospitalisation fell 40.1%, with a proportionate reduction in costs of 4,531.56 to 1,926.91€ per patient (the per patient cost is based on the whole group, including patients not requiring hospitalisation). The number of days of hospitalisation fell 39.26%, from a total of 1197 days to 727 days, with a savings in hospitalisation days of 39.26%. Costs thus also fell proportionally from 4,531.56 to 1,926.91€ per patient (the totals also include those patients not requiring hospitalisation). The theoretical “savings” in DRGs is 57.47.%.

Conclusions

The present research shows that HCNS care is a *protective factor* that reduces notably the number and days of hospitalisation. As regards the total number of hospitalisations, the percentage of patients (of all ages and regardless of pathology) requiring hospitalisation fell from 56% to 32.7%. The savings in costs is 56.95%. With the development of HCNS and a reduction and/or merging of hospital medical wards, healthcare costs could be reduced even further³. This outcome calls for a specific ad hoc research.

Many studies show that the reduction of hospitalisations, of days of hospitalisation and the reduction of the institutionalisation of elderly patients⁴, also depends on good care continuity after release from hospital⁵. One of the main roles of community nursing case managers is that of assuming responsibility for patients while they are still in hospital, in order to create conditions favourable for the elderly patient affected with a series of chronic poly-pathologies to remain in their own home, regardless of the kind of pathologies involved.

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