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Artículo de investigación

Follow up to a multipurpose hospital day care model in Medellin city

Seguimiento a un modelo de atención de hospital día polivalente en la ciudad de Medellín

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Comparte

Abstract

Introduction: Home-care models are safe and effective alternatives to the care of patients. The day care hospitals provide specialized care and targeted treatments with adequate quality standards, that can fulfill the expectations of patients and their families by different measures. However, this model has not been sufficiently explored in Colombia. This study aims to determine the safety and efficacy in terms of mortality, hospital readmissions and adverse events in the follow-up of a multipurpose day care hospital model focused in patients with internal medicine diseases in Medellín. **Design and methods:** A retrospective descriptive study of secondary sources, from the medical records registry of 3419 patients seen in an *"Early discharge program"* between June 2014 and May 2016 in Medellin city, patients were coming from hospitalization rooms of internal medicine and emergency departments of second and third level of complexity attention, and outpatient services. Univariate analyzes were performed through proportions and rates to determine mortality, hospital readmissions, and adverse events in the statistical package epidat version 4.1. **Results:** The average age was 62.6 ± 18.3 years. 66% were women. The most common diseases were chronic obstructive pulmonary disease (16%), Diabetes mellitus (11.3%), cardiac failure (11%). The rate of readmissions was 2.6% for the same diagnosis as admission to the program, the adverse event rate was 0.66 % and a mortality rate of 0.87 %. **Conclusions:** This retrospective analysis of the day care hospital model, it's the only one reported so far in Latin American literature, allows us to demonstrate its safety and clinical efficacy in the care of adult patients.

Keywords: Day Care Medical; Home care services; Medical care.

Resumen

Introducción: los modelos de atención domiciliaria son alternativas seguras y eficaces para del cuidado de los pacientes. Los hospitales - día brindan atención especializada y tratamientos dirigidos con adecuados estándares de calidad que logran llenar las expectativas del paciente y sus familias. Sin embargo, este modelo no ha sido lo suficientemente explorado en Colombia. Con este estudio se busca describir la seguridad y eficacia, en términos de mortalidad, reingresos hospitalarios y eventos adversos en un modelo de hospital - día polivalente enfocado en pacientes provenientes de servicios de medicina interna de la ciudad de Medellín. **Metodología**: estudio

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descriptivo retrospectivo de fuentes secundarias, de registros de 3 419 pacientes atendidos en el *"Programa de altas tempranas"*, procedentes de salas de hospitalización de medicina interna y urgencias de instituciones de segundo y tercer nivel de complejidad, y servicios ambulatorios. Se determinó la mortalidad, reingresos hospitalarios y eventos adversos. **Resultados**: edad promedio 62,6 ± 18,3 años. El 66 % eran mujeres. Las enfermedades más comunes fueron enfermedad pulmonar obstructiva crónica (16 %), diabetes mellitus (11,3 %) e insuficiencia cardíaca (11 %). La tasa de reingresos fue 2,6 %, una proporción de eventos adversos del 0,66 % y una mortalidad de 0,87 %. **Conclusiones**: este análisis es el único reportado hasta el momento en literatura de Latinoamérica y ayuda a demostrar la seguridad y eficacia clínica en la atención de los pacientes adultos.

Palabras clave: Hospitales de día; Cuidado domiciliario; Atención medica.

Introduction

The hospital care can bring with it the occurrence of adverse events for patients such as nosocomial infections, falls, delirium, among others. As a consequence, unwanted outcomes are generated, as well as prolongation of hospital stays or readmissions (1).

The high demand for emergency services for decompensated chronic diseases, the increase in health spending, the constant changes in populations have led to new models of medical care (2,3).

Ambulatory care models become important as an extension of conventional hospital care, especially home hospitalization and univalent day care hospital units, such as chemotherapy units, renal units or polyvalent units, where attention is given to patients with different diseases, showing savings in the medical care costs (4,5) and favorable clinical outcomes for patients by early reintegration into daily life (6,7). All without being inferior to the traditional hospital care model (8,9).

Day care hospital polyvalent units allow the application of medications at home as an alternative to reduce the need for traditional hospital care; in addition, they provide specialized care and targeted treatments with adequate quality standards that fulfill the expectations of patients and their families, especially those who require frequent hospitalizations for decompensated chronic diseases.

Day care hospital polyvalent units allow the application of medications at home as an alternative to reduce the need for traditional hospital care (10); in addition, they provide specialized care and targeted treatments with adequate quality standards that fulfill the expectations of patients and their families, especially those who require frequent hospitalizations for decompensated chronic diseases (11,12).

The regulations for implementation of the day care model in different countries are subject to controversy, added to the legal void that exists in many of them, especially in Latin America, which leads to the absence of monitoring indicators, among other problems (13-15).

With regard to the measurable benefits of home hospitalization models, a meta-analysis by Shepperd et al. Does not find evidence to show that care in home care services leads to different outcomes from patients with traditional hospital care, in relation to mortality and hospital readmissions (16). Other authors have not found differences in cost - effectiveness, acceptance and safety of ambulatory care models compared to traditional hospital care (7,17). Likewise, patients managed in day care hospitals have had a lower rate of falls (0 vs 0.8%) and similar rates of hospital readmissions (10.8% vs 10.5%) (18,19).

The effectiveness of alternative hospitalization models like day care hospital, has been shown for diseases like decompensated heart failure, re-hospitalization rates between 29 and 59% in the first six months of hospital discharge, generating 70% of

their costs in conventional hospitalizations (20,21). When comparing the management of decompensated heart failure in day care hospitals to traditional hospital care, there were no differences in deaths after one year of follow-up (8.8 vs 5.4%) (p = 0.67), nor in hospital readmissions (50 vs 40.5%) (p = 0.88) (14,22).

In patients with pulmonary diseases of high prevalence such as chronic obstructive pulmonary disease, the study by Gamez et al. reports a similar re-admission rate per month in the group of patients treated in the home care program and under the traditional hospital care model, of approximately 17 % (p = 0.5) (23).

Another example of management in day care hospital units in a polyvalent model, reported by Salazar et al. of patients admitted directly from an emergency service, shows a mortality rate of 2.3% and a rate of re-admissions within 30 days after discharge of 9.7% (24).

The majority of authors emphasize the integration of traditional hospital care with extra-hospital services as true networks that allow the modernization of health models with shared responsibilities in the care of patients. Overcoming the problems found and align primary care and hospital services (25-27).

The majority of authors emphasize the integration of traditional hospital care with extra-hospital services as true networks that allow the modernization of health models with shared responsibilities in the care of patients.

In Colombia the resolution 5521 of 2014 (10) defines home care as the provision of extra-hospital services that seeks to solve health problems at home or residence and has the support of professionals, technicians or assistants in the area of health and family participation. However, it does not specify the day care hospital models or how to implement them (28).

The objective of the present investigation is to describe the sociodemographic, clinical and safety and efficacy characteristics of the treatment of a population served under a day care hospital model in the city of Medellín between 2014 and 2016.

Methods

A descriptive study was conducted with data of 3 419 of patients older than 18 years, collected from medical records of patients treated in a model of day care hospitals polyvalent model called *"Early discharge program"* with diseases attended by the internal medicine service at the Artmedica health provider institution, between June 2014 and May 2016.

The program works under the modality of day care hospital polyvalent. The patients received specialized medical care for internal medicine physicians and support from a multidisciplinary team of health professionals. Patients are admitted between 8 a.m. and 5 p.m, which are referred from hospitalization or ambulatory services of the second and third level of complexity of Medellín city like Hospital Genetal de Medellín, Hospital San Vicente Fundación, Clínica Leon XIII, Hospital La María, Clinica Universitaria Bolivariana, Hospital San Rafael de Itagui, Hospital Manuel Uribe Ángel y Hospital Venancio Díaz. The program offers the necessary supplies and equipment of second and third level of complexity, such as oxygen, intravenous medications, diagnostic laboratory and image aids, among others; in addition, of non-medicalized transportation to guarantee the continuity of the treatment established.

Once the patient is at home, a transport route is scheduled to take him to the day care hospital's headquarters, where is evaluated by an internist and the rest of the team (respiratory therapy, nutrition, pharmaceutical chemistry, psychology and Nursing).

After the attention, it is again transported to the address where it continues with an established management plan, which includes the application of endovenous, subcutaneous or oral therapies.

The program lasts 14 days, during which the patient is provided with comprehensive care. In the case of decompensation of the underlying disease, or another disease found during the care, rehospitalization is performed according to the insurer's network, at the lowest possible level of complexity for the disease. A control medical appointment is made on the 15th day of discharge of the program. At the end of the cycle of care in the program, patients are discharged if their illness was acute and does not require further controls or is sent to the different ambulatory chronic management programs of each insurer.

For the development of this study were excluded patients who had medical discharge before reaching 48 hours within the program, or who only met criteria for home care in low complexity or presenting a clinical condition of instability or social problems that limited follow-up ambulatory in the program.

Efficacy variables were defined as the readmission rate within 15 days after hospital discharge for the same diagnosis that entered to the *Early discharge program* and as safety variables we use the rate of adverse events and mortality.

89.4% of the admissions to the early discharge program came from third level of complexity institutions, with an average hospital stay before discharge of 4.3 ± 4.7 days.

Univariate analysis was performed through proportions and rates to determine mortality, hospital readmissions and adverse events, using the statistical package Epidat version 4.1.

This study was carried out in accordance with the declaration of Helsinki and the Colombian law in resolution 8430 of 1993, in article 11, which considers it a minimal risk investigation, given that retrospective documentary research techniques and methods were used. No intervention or intentional modification of the biological, physiological, psychological or social variables of the individuals who participated was carried out or sensitive aspects of their behavior were treated.

Results

The mean age was 62.6 ± 18.6 years and 66% were women. 98% belonged to socioeconomic strata 1, 2 or 3. 89.4% of the admissions to the *early discharge program* came from third level of complexity institutions, with an average hospital stay before discharge of 4.3 ± 4.7 days. All the patients presented at least one additional comorbidity to their diagnosis of admission to the program, standing out as the most frequent Chronic Obstructive Pulmonary Disease, heart failure and Diabetes mellitus (Table 1).

Table 1. Sociodemographic and clinical characteristics

Demographic description	***%***
Gender: women	66
Origen: urban	95,5
Most common diagnoses	
Decompensated COPD	16
Diabetes mellitus	11,3
Cardiac failure	11
Urinary tract infection	9,7
Embolic desease	7,8
Complexity IPS sender	
Hospitalization third level	81,1
Hospitalization second level	7,2
Emergencies third level	8,3
Ambulatory services	3,4

COPD: chronic obstructive pulmonary disease
IPS: Healthcare institution

641 patients with supplemental oxygen requirements were admitted due to their lung disease, of which 49 % had an indication for chronic use. Among those that required oxygen in a transitory way, 81.5 % were definitively dismantled during the 14 days of the program.

A rate of 6.7 adverse events were found for every 1 000 patients treated in the program.

A rate of 6.7 adverse events were found for every 1 000 patients treated in the program, the most relevant were: three falls, which did not require surgical intervention; two cases of pneumonias associated with health services and a urinary tract infection associated with a catheter, the rest of the adverse events were related to the application of medications or taking of laboratory tests. Of the total number of events, approximately 61 % were not preventable and none caused fatal outcomes (Table 2).

Table 2. Safety and effectiveness indicators of the *early discharge program*

Category	***%***
Adverse events	
Preventable	0,26
Not preventable	0,4
Readmissions occurred within 15 days after hospital discharge	
Diagnosis equal to the program	2,63
Diagnosis different to the program	4,1
Mortality	
Preventable	0,87
Not preventable	0

6.7 % of readmissions occurred within 15 days after hospital discharge. Of the total number of readmissions, 6 % was due to the patient's own decision or administrative decision.

Among the patients who had a diagnosis of exacerbated COPD, 7.7 % presented hospital readmission before 15 days after discharge, being the disease with the highest rate of readmissions; In order of frequency were heart failure (2.4 %) and diabetes mellitus (2.1 %). The mortality rate was 0.87 %. All deaths were considered non-preventable after their analysis.

For the follow-up period 30.5 % required follow-up in chronic ambulatory care programs.

Discussion

There are numerous models of home care in the country, but with few data in the scientific literature that endorse their benefits. This is the first model reported in Latin America as a day care hospital with comprehensive monitoring by general and specialized medicine with diagnostic and therapeutic functions for multimorbidity management in the area of internal medicine.

Outpatient care models, especially day care hospitals models, have been strategies in the field of health care and the provision of medical services for decades, especially in European countries and in North America, are use as hospital extension strategies (5,6).

The growing demand for quality medical services and an increase in the prevalence of chronic diseases in increasingly older populations, with the consequent deficit of hospital beds, is leading to change the traditional strategies in which the hospital is the center of medical care (9,11).

Early discharge from hospitalization can bring additional benefits for patients, including: facilitating rehabilitation, generating participation of caregivers, increased quality of life and patient satisfaction, early return to working life.

The models of home hospitalization have shown great benefits compared to traditional hospital care models (1,4,6). The present day care hospital model, proved to be in line with the world literature in terms of safety, due to the fact of low rates of rehospitalization (2.63%) compared to 9.7% for general hospitalization rooms (4). Low mortality rates and adverse events were also found, compared to 2.3% mortality (4) and 0.8% of adverse events, mainly falls in the classic hospitalization (18). Considering as a limitation of the study the absence of another model of attention to make comparative analysis of groups.

These results are important since the majority of patients were referred from institutions of the third level of complexity or from emergency rooms (institutions with high demand and resource expenditure), favoring the release of beds, the reduction of congestion and hospital stay, generating an increase in bed-turnover without reducing the quality of medical attention for patients with acute or decompensated chronic diseases (measured in readmissions, mortality and adverse events).

Early discharge from hospitalization can bring additional benefits for patients, including: facilitating rehabilitation, generating participation of caregivers, increased quality of life and patient satisfaction, early return to working life; situations that have been demonstrated in other day care hospital units of the world (23,29).

Day care hospital programs have been applied in developed countries, having differences in matter of costs when compared to Colombia; Therefore, it is necessary to

evaluate the economic impact that it would generate, in addition to think in comparative studies, with traditional hospital care in the management of different diseases and evaluating their impact on the national health system.

Unfortunately, there is no current laws for the implementation and evaluation by indicators of day care hospital models outside the area of psychiatry (10), which is why it is difficult to find verifiable information in the care of patients with other medical conditions. With the *early discharge program*, we propose a way to implement the day care hospital model as well as indicators for its evaluation.

Among the limitations of the present study is that there was no follow-up longer than 15 days after discharge from the program, which makes it difficult to assess the presence of readmissions and early mortality. Due to the type of methodological design, it is not possible to establish associations between outcome and care model since there is no comparator.

In conclusion, this retrospective analysis of patients treated in a polyvalent day care hospital model helps to demonstrate their safety and clinical efficacy in the medical care of patients. However, studies are needed in our environment that compare the two models of care.

It is recommended to strengthen the confidence of clinicians and administrators in outpatient medical care models.

It is recommended to strengthen the confidence of clinicians and administrators in outpatient medical care models, as this becomes the greatest barrier to proper integration with traditional hospital care models. Likewise, it is proposed to evaluate strategies that facilitate the implementation of polyvalent day care hospital models in Colombia in order to normalize their use and exploit their benefits for the current health care model.

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