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SYSTEMATIC REVIEW

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Economic Impact Of Hospital Palliative Care Units: A Systematic Review

Impacto Econômico das Unidades de Cuidados Paliativos Hospitalares: Revisão Sistemática

Impacto Económico de las Unidades de Atención Paliativa Hospitalaria: Revisión Sistemática

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ABSTRACT

Objective: The study's main goal has been to determine whether the practice of palliative care in specific units reduces hospital costs for terminally ill patients. **Methods:** It is a systematic review. There were searched primary studies based on LILACS, SCOPUS, SciELO, MEDLINE and Cochrane Library published over the period from January 2014 to January 2019, involving hospitalized adult terminally ill patients. **Results:** There were selected 15 studies published in English and performed in nine countries, all high and medium-high income. Observational evidence was found that patients in palliative care units had comparatively lower costs. **Conclusion:** The addressed studies have compared cost minimization, but many did not report relevant economic analysis for palliative care units. The results of this review point to the need for further investigations regarding economic analysis in health, aiming to obtain broader subsidies of the interrelations between care and costs.

Descriptors: Palliative Care, Health Care Costs, Hospital Units; Terminal Care, Systematic Review.

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RESUMO

Objetivo: Determinar se a prática de cuidados paliativos (CP) em unidades específicas reduz os custos hospitalares para pacientes com doenças terminais. **Métodos:** Realizou-se uma revisão sistemática da literatura. Pesquisaram-se estudos primários nas bases da LILACS, SCOPUS, SciELO, MEDLINE e Biblioteca Cochrane publicados entre janeiro de 2014 e janeiro de 2019, envolvendo pacientes adultos com doença terminal hospitalizados. **Resultados:** Seleccionaram-se 15 estudos publicados em inglês e conduzidos em nove países, todos de renda alta e média-alta. Encontraram-se evidências observacionais de que pacientes em Unidades de Cuidados Paliativos (UCP) apresentaram comparativamente menores custos. **Conclusão:** Os estudos compararam a minimização de custos, porém muitos não relataram análise econômica relevante para UCP. Os resultados desta revisão apontam para a necessidade de pesquisas com análise econômica em saúde, a fim de obter subsídios mais amplos das interrelações entre cuidado e custos.

Descritores: Cuidados Paliativos, Custos de Cuidados de Saúde, Unidades Hospitalares, Assistência Terminal, Revisão Sistemática.

RESUMEN

Objetivo: Determinar se la práctica de cuidados paliativos (CP) en unidades específicas reduce los costos hospitalarios para pacientes con enfermedades terminales. **Métodos:** Se realizó una revisión sistemática de la literatura. Se investigó estudios primarios en las bases LILACS, SCOPUS, SciELO, MEDLINE y Biblioteca Cochrane publicados entre enero de 2014 y enero de 2019, involucrando pacientes adultos con enfermedad terminal hospitalizados. **Resultados:** Se seleccionaron 15 estudios publicados en inglés y conducidos en nueve países, todos de renta alta y media-alta. Se encontraron evidencias observacionales de que pacientes en Unidades de Cuidados Paliativos (UCP) presentaron comparativamente menores costos. **Conclusión:** Los estudios compararon la minimización de costos, pero muchos no relataron análisis económico relevante para UCP. Los resultados de esta revisión apuntan para la necesidad de investigaciones con análisis económico en salud, a fin de obtener subsidios más amplios de las interrelaciones entre cuidado y costos.

Descriptores: Cuidados Paliativos, Costos de Cuidados de Salud, Unidades Hospitalarias, Asistencia Terminal, Revisión Sistemática.

INTRODUCTION

As addressed by the Pan American Health Organization (PAHO), chronic noncommunicable diseases account for over 60% of mortality and disability in most countries, including Brazil. Considering that approximately 15% to 30% of these patients die in intensive care units,¹ it is important to reflect on end-of-life quality and the need for Palliative Care Units (PCU), as well as within the economic health analysis of the palliative approach.

According to the International Association for Hospice and Palliative Care (IAHPC), Palliative Care (PC) is the active holistic care of individuals of all ages with serious health-related suffering due to serious illness, and especially those near the end of life. It aims to improve the quality of life of patients, their families and their caregivers.²

With the technical-scientific advancement, countless interventions have been employed in the process of maintenance of vital functions and, with this artificial support of life, considerably benefit patients with acute diseases

with a prospect of cure. Nonetheless, if applied to patients with no possibility of restoring life-compatible conditions through these measures, potentially inappropriate interventions may occur that bring greater possibilities of harm than benefit without relief from suffering and prolonging the death process.^{3,4}

Characteristically, these patients have prolonged hospitalizations in the hospital environment, manifesting significant changes in metabolism and severe impairment of functional capacity. In addition to lengthening the suffering of patients and their families, substantial health resources are consumed, and at the hospital level, managers may be discouraged from providing quality care to these patients, with coverage for palliative care in hospitals being very limited. For those who stay in intensive care unit beds, the aggregate costs of pharmacological therapy, mechanical ventilation time, renal replacement therapy, invasive and noninvasive monitoring are high, with no prospect of patient recovery.⁵

Economic evaluation in health care is essential to validate the current provision and assess the need for new programs. The economic analysis of health care is in a different field than most analyzes of other goods and services. It is understood that access to certain health care can mean the difference between life and death, but while such care is needed throughout life, it becomes inevitable and crucial at the end, because it affects not only individuals but also their families and society at large. It is assumed that the PCU-based approach may reduce costs for hospitalized adults in late life, but economic research in this area is considered scarce and little is known about the extent and extent of the costs involved in providing it, although it is a political priority around the world,⁶ and decision-making inputs for effective resource allocation are needed.⁷

Considering these aforesaid assumptions, the aim of this study was to determine whether the practice of PC in specific units for this approach reduces hospital costs for terminally ill patients compared with other inpatient units.

METHODS

It is a systematic review, which is a research method that allows to gather and synthesize the state of knowledge, in a systematic and orderly manner, with a delimited theme, and point out knowledge gaps that need to be filled by conducting new studies.¹⁰

In order to increase clarity around the research objective, some key review concepts need to be presented. A palliative approach was defined as a comprehensive PC assistance that incorporates specialized and/or generalist elements. For the purposes of this review, specialized palliative care is defined as care provided by professionals who have undergone specialized training, while generalist palliative care is defined as that provided as part of standard clinical practice by any non-health care professional of a

team that specializes in this approach but follows the PC approach.

The general term 'palliative care units' has been used in this article to cover interventions that specify a focus of palliative care and/or palliative care-related care. The term "end-of-life" has been deliberately kept vague to include as many studies as possible, for instance, studies that focus on the last seven days, the last month, the last three months, and so on.

For the elaboration of the review, the following steps were followed: (1) definition of the research question; (2) definition of the descriptors for the search; (3) definition of the eligibility criteria of the articles; (4) conducting database searches; (5) definition of the information to be extracted from the selected studies; (6) selection of articles to compose the review based on screening of titles and abstracts using prespecified inclusion and exclusion criteria; (7) full reading of the studies selected by titles and abstracts; (8) extraction of data and information in accordance with the objectives of the spreadsheet survey created for this purpose; (9) synthesis of evidence; (10) evaluation of study quality; (11) interpretation of results and synthesis of the knowledge produced.

To guide the study, the structured question was formulated according to the PICO strategy (Patient, Intervention, Comparison, Objectives): "Does the economic impact of palliative care units differs from that of conventional care units, when considering critically ill and terminally hospitalized patients?"

Searching Strategy

There were included the following search terms, indexed in the Health Sciences Descriptors (DeCS): "health care costs", "palliative care" and "terminal care", combined through the Boolean expression "AND".

Due to its well-known indexation of publications in the health area, the databases of *Literatura Latino-americana e do Caribe em Ciências da Saúde (LILACS)* [Latin-American and Caribbean Literature in Health Sciences], SCOPUS (Elsevier), Scientific Electronic Library Online (SciELO) and Medical Literature Analysis and Retrieval System Online (MEDLINE) were searched, the latter being accessed through the Virtual Health Library (VHL). A secondary search was also performed at the Cochrane Database of Systematic Reviews to ensure that other important articles were not missed, and when revisions were identified in this search, they were reviewed to identify unidentified empirical studies in the original search.

The reference lists in the included articles were also searched manually. To minimize publication bias - which occurs when the number of published studies is not representative of the total number of studies on the research problem - a search was made to identify unpublished studies in the Master and Doctorate thesis databases of major Brazilian universities or on national digital bases.

Google Scholar was employed in a complementary search for studies. Because it is a commonly used academic search engine on the Internet, it is considered a useful adjunct to evidence research. For this, the visible snapshots of the first 1,000 records resulting from the search were considered.¹¹

For the extraction and recording of key information, a spreadsheet was prepared and completed that allowed gathering and synthesizing elements related to authorship and publications (indexing database, title, year, journal, language, country of origin, model of the study, objectives and main results).

Eligibility Criteria

Inclusion criteria were as follows: (1) original articles (publications with primary results of scientific research presenting original data from experimental or observational studies, with descriptive analysis and/or inferences from own data); (2) published between 2014 and 2019; (3) availability of the full texts; (4) articles published in English, Portuguese and Spanish; (5) quantitative, qualitative or mixed approach studies; (6) publications related directly to the research question; (7) research involving adult patients of any gender admitted to a hospital environment; and (8) research involving patients in specific PC units compared to patients eligible for such care but admitted to other hospital units.

Exclusion criteria were as follows: (1) articles in the form of abstracts and papers published in congress proceedings (2) studies presented as book chapters; (3) articles that were repeated between the databases; (4) comparison groups composed of participants from home PC, hospices or any non-hospital institution; and (5) studies that did not report economic data as health economic analysis.

Selection of Articles

The titles of the total of articles that resulted from the search were read. After selection by titles, abstracts were read to verify that they met the inclusion criteria. After this first phase, the selected articles were read in full and then the predetermined key information was extracted, considering the proposed research question. After completing the data summary worksheet, a descriptive review of categories was performed from this.

In order to minimize bias in the selection and interpretation of the studies, two researchers (TCV and RLSM) independently searched the electronic databases, as well as data extraction, with each discrepancy resolved by consensus.

The search has been limited to the past five years in recognition of the rapidly changing nature of health economic analyzes and the limited scope of previously published PC research.

The evaluation of the level of scientific evidence was based on the proposal by the Agency for Healthcare

Research and Quality (AHRQ), in which seven levels for quality/strength of evidence are enumerated, covering both quantitative and qualitative studies.¹²

RESULTS AND DISCUSSION

The initial search in the databases prior to screening resulted in the finding of 303 articles. By applying the filters represented by the time and restriction limits to the three predefined languages, the total was increased to 101 articles. These were inserted in an Excel application spreadsheet according to the indexing base, following the alphabetical order of the titles, indicating the authors and thus enabling the identification of duplicate articles. In this second screening, 17 articles were excluded. Reading the abstracts, it was found that 43 articles met the inclusion criteria. By reading the full text of these articles, 28 were excluded because they did not answer the guiding question, leaving 15 articles (Figure 1).

These numbers included four articles searched using Google Scholar, three of which were included. There were found 17 theses and dissertations resulting from the search with the descriptors in electronic repositories. None of them specifically addressed the proposed research problem.

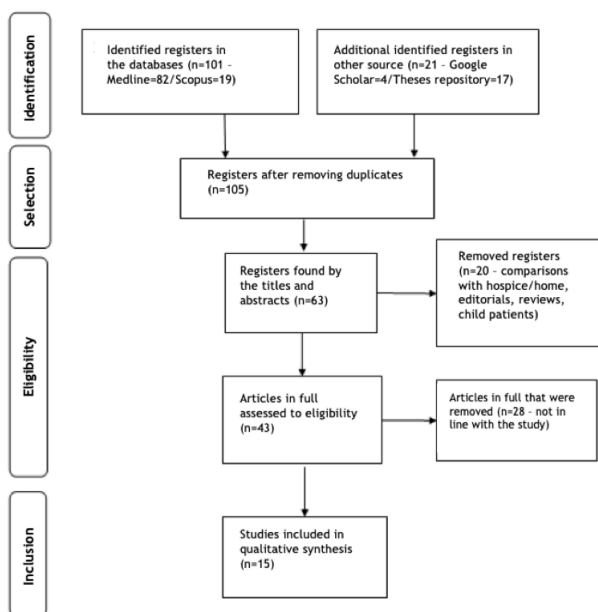


Figure 1- Flowchart to summarize the search process and include/exclude publications addressed in this review. João Pessoa city, Paraíba State, Brazil, 2019

All articles included in the selection were published in English. Regarding the database, the vast majority was found through MEDLINE (80%). In the analysis of the methodological characteristics of the selected publications, it was observed that all were observational model studies, with a quantitative approach. Twelve articles (80%) with retrospective studies and three (20%) prospective studies. The 15 studies fit the level of evidence 4 (scale with

categories between 1 and 7). All studies were approved by the institutional research ethics committee.

Scope research indicated that the studies included in the review had several methodologies and significant heterogeneity; Therefore, a thematic synthesis was made based on the results of the various articles. In this categorization of the studies, it was possible to establish four groups in which the results fit, with estimated costs classified as follows (Table 1):

- Group 1: Studies showing lower costs with lower hospital admission rate, lower number of diagnostic/therapeutic procedures, lower number of Intensive Care Unit admission and death in hospital (11 studies);
- Group 2: Studies in which cost reduction was related to the intervening factor of the number of comorbidities of patients who met criteria for PC (two studies);
- Group 3: Study in which the reduction of costs was related to the intervening factor of the early referral for palliative treatment of selected patients (one study);
- Group 4: Study in which there was no direct relationship of cost reduction of PCU performed in the hospital environment (one study).

Table 1: Articles categorization into groups according to positive results or its absence, and the presence of intervening factors (review 2014-2019). João Pessoa city, Paraíba State, Brazil, 2019

Group	Author/Year	Title
Group 1	Binney et al. (13) (2014)	Feasibility and economic impact of dedicated hospice inpatient units for terminally ill ICU patients
	Kim et al. (14) (2015)	Does hospital need more hospice beds? Hospital charges and length of stays by lung cancer inpatients at their end of life: A retrospective cohort design of 2002-2012
	McCarthy et al. (15) (2015)	Cost Savings from Palliative Care Teams and Guidance for a Financially Viable Palliative Care Program
	Robinson et al. (16) (2015)	The extent and cost of potentially avoidable admissions in hospital inpatients with palliative care needs: a cross-sectional study
	Wang et al. (17) (2015)	Association between palliative case management and utilization of inpatient, intensive care unit, emergency department, and hospice in Medicaid beneficiaries
	Ciałkowska-Rysz et al. (18) (2016)	How much does care in palliative care wards cost in Poland?
	Wang et al. (19) (2016)	How different is the care of terminal pancreatic cancer patients in inpatient palliative care units and acute hospital wards? A nationwide population-based study
	Chaudhuri et al. (20) (2017)	Critical care at the end of life: a population-level cohort study of cost and outcomes
	Ireland (21) (2017)	Access to palliative care services during a terminal hospital episode reduces intervention rates and hospital costs: a database study of 19 707 elderly patients dying in hospital, 2011-2015
	Isenberg et al. (22) (2017)	Economic Evaluation of a Hospital-Based Palliative Care Program
	Patel et al. (23) (2017)	Palliative Care and Health Care Utilization for Patients with End-Stage Liver Disease at the End of Life
Group 2	May et al. (24) (2016)	Palliative Care Teams' Cost-Saving Effect Is Larger for Cancer Patients with Higher Numbers of Comorbidities
	Scibetta et al. (25) (2016)	The Costs of Waiting: Implications of the Timing of Palliative Care Consultation among a Cohort of Decedents at a Comprehensive Cancer Center
Group 3	Nevadunsky et al. (26) (2014)	The role and timing of palliative medicine consultation for women with gynecologic malignancies: association with end of life interventions and direct hospital costs
Group 4	Morishima et al. (27) (2014)	Association of healthcare expenditures with aggressive versus palliative care for cancer patients at the end of life: a cross-sectional study using claims data in Japan

The 15 studies were carried out in nine high-income and upper-middle-income countries, nearly half of the articles in the United States. The vast majority of studies focused on cost savings. Only one study used the cost-effectiveness estimate.²²

Fifteen eligible studies were identified, all observational cohort, most retrospective (12 of 15 studies), published between 2014 and 2019. Therefore, as all studies had observational models, a cause and effect relationship (PCU and cost reduction) cannot be suggested in studies in which positive economic health outcomes have been observed.

Total direct costs were heterogeneous in terms of settings, methods, cost strategies and duration of follow-up periods, limiting the conclusions drawn, as well as the possibility of meta-analysis associated with the review, but the results constitute evidence that, although of weak to strong scientific hierarchical classification, can be used to guide health managers in determining whether PCU improves health outcomes compared to interventions usually performed in hospitals, both in terms of costs and length of stay and hospital discharge.

It is highlighted that none of the studies were performed in poor countries. Half of the studies were of US origin, which represents a challenge for researchers from other countries, as economic evidence does not simply transfer between different socioeconomically different countries or between different health systems. Nevertheless, international comparisons on the economics of health care are clearly valuable for gaining cost-effectiveness trends across health systems and health care models.²⁸

The main answer to the research question was answered since it was found that most of the 15 studies analyzed comparing hospital PC with traditional hospital care for terminally ill patients in various clinical conditions showed a reduction in hospital costs.¹³⁻²³ Studies that considered predominantly variables that interfere with costs such as the number of comorbidities²⁴ and precocity of PC^{25,26} involved only cancer patients. Only one study revealed no lower costs associated with the implementation of PC,²⁷ a retrospective cohort study involving terminal cancer patients in Japan where the group receiving traditional non-palliative care underwent so-called “aggressive” interventions such as chemotherapy in the last month of life. Even so, no difference was found between the compared groups, although the PC group received more opioid analgesia.

In these studies, there was observational evidence that patients under PC not only had comparatively lower costs, but also had a lower frequency of intensive care unit admission, fewer procedures, shorter hospital stays, and a lower percentage of deaths in the hospital.¹³⁻²⁶

Among the various types of existing economic valuation methods, such as cost-effectiveness, cost-utility, cost preference, cost-effectiveness. The latter is of a special nature, as some experts use it generically to describe all types of analyzes because the unit of measurement may be finite, and may include the number of prevented diseases, prevented hospitalizations, detected cases, number of lives saved or quality-adjusted life-year (QALY).²⁹

Overall, what sets them apart is how they measure health outcomes. Each type of assessment compares the

costs of alternative strategies but varies in how effectiveness and effectiveness are measured. Few direct cost-benefit estimates have been reported, which is a measure comparing benefits of measured money treatment, but also on avoided hospitalization days and improved quality of life and symptom relief. The main limitation or difficulty of cost-benefit studies is the so-called “monetization of health”, confronting controversial questions such as “is pain relief costly?” The attribution of monetary values to health impacts, especially health Human life is a difficult task.²⁹

Outstandingly, the analysis of **Group 1** results showed a diverse range of underlying diseases, conditions of focus and types of tools used in economic impact assessments. On the other hand, most studies did not report the full economic outcome items recommended in health cost analyzes, but only cost minimization, without cost-effectiveness estimates, or cost-utility and cost-benefit analyses.

In light of the results of the revised studies on economic analyzes in hospital PC, this review is a timely update on a high priority health topic. The possibility of establishing such care opens a wider range of possibilities for end-of-life patient management, especially when the philosophy of humanized care gains strength and the beginning of concern for comfort, relief from suffering and dignity towards the patient and his or her family does not occur only in terminality, but at the moment of the diagnosis of a life-threatening disease and also individualized according to the needs of patients and their families.

In line with the economic aspect, one can take into account the notion of opportunity cost, where in the face of budgetary and human resource constraints, complex decisions are imposed and when one opts for the wrong intervention - one that does not generate additional benefits -, one can waste the opportunity to invest in alternatives that could bring more gains to patients.^{28,34}

The concern of hospital managers and health professionals with chronic patients has been increasing, in parallel with the expansion of the literature on this subject, especially regarding patients with an indication for PC. The body of economic assessments of PC interventions in hospitals follows this expansion, highlighting researchers' response to a literature gap.⁷ More attention is needed to follow established guidelines for economic reporting to improve evidence for PC cost analysis.⁶

Hence, to corroborate these results, further prospective observational studies, since double-blind, randomized controlled trials are not appropriate research models to answer cost-utility and cost-effectiveness questions of interventionist approaches to palliative approach for bioethical reasons. However, further analysis of the heterogeneity of the treatment effect offers the potential to reduce biases of these types of analyzes and to identify populations for which PC interventions are most cost-effective.⁷

It is also important to note that there may be complex interactions between care and diagnosis costs (e.g., cancer/

non-cancer distinctions), age groups and other factors such as length of hospitalization and length of onset of PC after hospital admission.

Methodological innovations are also needed to generate new approaches to data collection that provide more accurate cost estimates in PC. Although some approaches are country or region-specific, the value of international comparative economic data is significant and should drive further methodological developments in this area.

CONCLUSIONS

The studies included in this review support the assertion that hospital palliative care is generally less costly than the usual comparative intervention groups and, in most cases, the difference in costs was statistically significant. The main focus of these studies was on direct monetary costs, with little cost-benefit data and none of the cost-utility data.

Nonetheless, such evidence might contribute to elucidate the current state of research published in terms of costs of hospital PC interventions, highlighting the importance of the gap that needs to be addressed in the literature in this field due to the lack of studies in developing countries, with analysis of broader modalities of economic health assessment in order to gain broader insights into the interrelationships between care and costs.

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