Comparative analysis of hospital admission authorizations, mortality rate and deaths of patients with cardiovascular pathologies

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Abstract: Cardiovascular pathologies are a public health problem of great relevance, where hospital expenses, mortality and death rates and high mortality rates, however, the support of information for situational analysis and health planning is of relevant importance. Where, reports via the public information system, consists of subsidies for planning, execution of actions and decision making. It is also an important indicator in the preparation of health actions, task, with the establishment of methods, strategic evaluations and goals in health services. Therefore, the reports of financing, permanence and deaths in cardiovascular pathologies stimulates the analysis of costs, concomitantly, causes analysis of management actions in the function   to promote quality and safety in the execution of the provision of health services, besides having a positive impact on decision-making by reducing or minimizing risk factors in the face of poor planning. To verify data and compare them on financing, stay in the hospital unit and the amounts and rate of deaths of patients with cardiovascular pathologies. The search strategy was delineated in the databases of the Ministry of Health (MS) DATASUS, Hospital Information System (SIH), and NET TAB of the Government of the State of Pernambuco. The criteria for data extraction six large hospitals in the State of Pernambuco, authorization of hospitalization, hospitalization, quantitative and death rate, sex of patients hospitalized for cardiovascular pathologies, in comparative analysis in June and May 2018. After extraction in a database, via TAB NET of the State of Pernambuco, 12 worksheets appeared that referred to the association of the factors sought. Among these worksheets, 05 worksheets were described and presented. Where, funding values, deaths, mortality rate and gender were described. The total financing values of the regional health of May and June, where, in the comparisons, investment of R$ 8,225,987.87 was demonstrated, which is equivalent to 92% of the total investment of the State. The information system has a   positive impact on health planning actions, especially when describing an analysis on cardiovascular pathologies, where this pathology requires high-cost investment from prevention in primary care to treatment in intensive care units.

Keywords: Health Care Financing. Government Funding. Health Planning. Information Systems. Mortality.

1. Introduction

Health Information System (SIS) is defined by the World Health Organization (WHO) as a mechanism for collecting, processing, analyzing and transmitting the information needed to plan, organize, operate and evaluate health services.   The Department of Informatics of the Single System of Health (DATASUS) is assigned the responsibility to collect, process and disseminate health information. DATASUS maintains an instrument that includes several types of data – demographic, epidemiological, financial – about each state and municipality of Brazil (BRASIL, 2014;   PORTAL SAUDE, 2012a; UNASUS, 2014).

The Pan American Health Organization (PAHO) defines the Health Information System (SIS) as a set of components: administrative structures, statistics and health, health information units. These, system should act with integration, with the purpose of producing information, and provide opportunities for the implementation of decision-making processes, planning, projects in the health services system (NASCIMENTO;   HERZOG; SABROZA, 2012).

Health insurance is a   tool for planning.   The planning subsidizes administrative actions, which can evaluate, and reevaluate process in the management of health services. This, presents the guidelines and objectives of the Planning System in the Unified Health System (SUS), whose actions need information for an efficient and effective planning. Priority points are highlighted, such as the adoption of the health needs criterion for planning and programming. It is therefore essential to integrate the integration of astrologers from the spheres of Government, the Ministry of Health (MS), state and municipal health departments (NASCIMENTO; HERZOG; SABROZA, 2012; UNASUS, 2014).

The Health Information System (SIS) aims to allow the proper formulation of health diagnoses, an instrument for planning health actions. In Brazil, the SIS can evaluate, monitor and control the   activities developed by providing health services, through indicators, numerical data, profile, among others, facilitating the formulation and evaluation of health policies, plans and programs.   As an analysis tool, hospital admission authorizations (AIH) with their respective costs, permanence, patient profile and number of deaths of patients with cardiovascular pathologies is of vital importance health planning strategies.

2. Methodology

This is an original, comparative study with the use of quantitative approaches for data collection and analysis. The analysis of the database was secondary, and with the search period during the months of august 2018. The strategy of analysis in a database of   the Ministry of Health (MS), via DATASUS - TAB NET and the Hospital Information System (SIH) by place of hospitalization, was delineated via funding in the six large public hospitals with full management: Hospital da Restauração (HR), Hospital Otávio de Freitas (HOF), Hospital Agamenon Magalhães (HAM), Hospital Barão de Lucena (HBL),   Getúlio Vargas Hospital (HGV), Agreste Regional Hospital (HRA).   And description of pathologies related to cardiovascular impairment.   Data were collected such as length of stay,   number of deaths, funding through the AIH's and the sex of these deaths, in   the database were collected the months of May and June 2018. To extract data, funding was selected according to the authorizations of hospital admissions (AIH), death rate, number of deaths and sex of patients.

Some steps were adopted to analyze the findings to establish which data would be presented in order to verify its relationship with the themes, and then proceed to the extraction of the data.

A matrix spreadsheet was applied to obtain control of all the spreadsheets found in tabnet databases with the following discriminations: Cardiovascular pathologies, year 2018 in the months of May to June, obits and mortality rate in ICUs, hospitals in the State of Pernambuco, the health regions in Pernambuco, hospital admission authorization (AIH), funding for AIH, sex, sex by death and sex by death. And this, they served with the inclusion criteria of the study. The exclusion criterion was the spreadsheets with duplicate information and those that were not spreadsheets with incomplete information, and did not address the pre-established themes. After selecting the spreadsheets, they served as a   database and underwent a full analysis to assess whether they really were in accordance with the theme researched.

Statistical Analysis

For data analysis, a database was constructed and the funding values were described via analysis in biostatic program 2011.1

3.   Results and Discussion

Through extraction in data database DATASUS - TAB NET and the Hospital Information System (SIH) of the Government of the State of Pernambuco, 30 spreadsheets that referred to the association of the terms sought appeared.   The spreadsheets were analyzed   and the ones that referred to the theme entered the sample and statistical analysis, these were attached to the matrix worksheet, after deletion of   duplicate data and application of inclusion and exclusion criteria,   10 worksheets remained   that were compiled in 07 worksheets.

Table 1.   Financing, through authorization of hospitalization (AIH) by health regions of the State of Pernambuco, through the type of care, cardiovascular pathologies, in June and May 2018.

Municipality	Total
Afogados da Ingazeira	45.113,90
Arcoverde	57.023,72
Caruaru	140.542,57
Garanhuns	53.072,60
Goiana	4.610,22
Limoeiro	13.498,22
Ouricuri	35.523,36
Palmares	167.134,98
Petrolina	18.577,19
Recife	8.225.987,87
Salgueiro	74.548,82
Serra Talhada	50.603,53
Total	**8.886.236,98**

Source : MS/SIH/SUS - TabNet, 2018.

Table 2.   Financing, through authorization of hospitalization (AIH) in hospitals in Pernambuco, through the type of care in patients with cardiovascular pathologies, in June and May 2018.

	Elective (May)	Elective (June)	Urgency (May)	Urgency (June)	Total
AIH	990.594,86	994.570,65	2.591.822,75	2.645.960,28	

Source : MS/SIH/SUS - TabNet, 2018.

Table 3.   Financing, through authorization of hospitalization (AIH) in large hospitals in Pernambuco, through the type of care in patients with cardiovascular pathologies, in May and June 2018.

	Elective (May)	Elective (June)	Urgency (May)	Urgency (June)	Total
Diseases of the circulatory system	172	190	1.096	1.038	**2.496**

Source : MS/SIH/SUS - TabNet, 2018.

Table 4.   Mortality rate due to heart failure   and other heart diseases by health regions of the State of Pernambuco, in the months of May and June 2017.

Health Region	Mortality Rate (June)	Mortality Rate (May)
Arcoverde	19,44	9,52
Cabo de Sto Agostinho	7,32	8,05
Capoeiras	100,00	-
Caruaru	10,53	10,91
Ouricuri	42,86	23,08
Palmares	17,39	23,21
Paulista	7,14	18,52
Pedra	100,00	
Recife	7,79	8,07
Salgueiro	17,39	16,67
Serra Talhada	21,05	13,64
Total	**8,82**	**9,47**

Source : MS/SIH/SUS - TabNet, 2018.

Table 5.   Mortality rate due to heart failure and other heart diseases by sex, in the six   major hospitals of the State of Pernambuco, by criterion of use and type of ICU, in the months of May and June 2017.

Sex	June	Maio
Male	8,23	9,59
Female	9,42	9,35

Total	**8,82**	**9,47**

Source: MS/DATASUS/SIH/SUS - TabNet, 2018.

The Hospital Information System (SIH) -SUS is a device to operate the payment of hospitalizations and to instrumentalize actions to control expenses and hospital audit. The instrument for data collection is the authorization of hospitalization (AIH), this   form contains the data of care, with the diagnosis of hospitalization and discharge (codified with the International Code of Diseases - ICD), information related to the characteristics of the person (age and gender), length of stay and place of hospitalizations, procedures performed, the amounts paid,   data from health units, procedures, deaths, among others (BRASIL, 2010; PORTAL SAUDE, 2012a; UNASUS, 2014; BRAZIL, 2014).

To identify different complexity profiles of hospital admissions, focusing on improving management, especially the resources paid to hospitals, AIH are great sources of information, serving as a tool for planning actions in health services. Where, it is possible to use the systems of information to trace a profile of hospitalizations in groups, expenses, length of stay, profile of the client and deaths due to respective pathologies (PORTAL SAUDE, 2012a; UNASUS, 2014).

Studies show that information systems, such as those for neglected diseases, the Notifiable Disease Information System (SINAN) have been used to create a database, with this, one can evaluate the effect of pathologies, areas of greater involvement, control, surveillance and health control actions. The health notification process, and the processing of records about activities, procedures, aims to diagnose, treat, evaluate and promote intervention actions via health planning.   It has been   established that since 2006 it has been well established the publicization of data in Brazilian states, through information   systems there   is free access to the entire population, which indicates transparency in public spending, and the   analysis of transfers and expenses with specific areas of health (NEVES ; HERZOG; SABROZA, 2012).

According to the results presented (Table 1), in the twelve health regions of the State of Pernambuco, invested in the regional Recife R$ 8,225,987.87 - (92%),   of the total investment   of R$ 8,886,236.98 in the twelve health regions. We emphasize that the totalization of investments describes the financing with cardiovascular pathologies from the outpatient level to hospital investments.

In Brazil, the mechanism of financial reimbursement paid to hospitals for the services used is through the completions and registration of the AIH, but the quality of the notes of the forms and registration in the system can interfere in the poor quality of the information.   The procedures reported by the AIH are part of the list of medical procedures and multidisciplinary team care, these procedures and their respective notes can interfere in the   management of care, quality and patient safety.

Care management can also be interconnected and be evaluated/subsidized by information from systems in health services, such as length of stay and deaths in Intensive Care Units (ICU). The actions of health planning, and is understood as, actions of organization and control of the provision of care, safe and quality, with guarantee of continuity and systematization of care. From this perspective, the information supports the actions of care planning, forecasting and organization of care, which favors the actions of health and health professionals (MORORÓ *et al*., 2017).

In one study, the association on Transaction Cost Savings (ECT) was investigated, and it can provide subsidies for the analysis of the process of regionalization and agreement of health networks and existing intrinsic costs (SANCHO *et al*. , 2017). Thus,   it also concludes, the agreement and the conformation of regionalized health actions or services, as put by the federative model, has some positive effects that improve the efficiency in the provision of services and the reduction of operational costs, through the specialized offer of health actions and services (SANCHO *et al*. , 2017).

In this context, the Ministry of Health aiming at the integration of the various information systems compiled DATASUS with some information systems and through the NET TAB of states and municipalities we have compiled information. The station of communication parameters between systems and the creation of the SUS table repository are relevant of great relevance for obtaining health information. The National Registry of Health Establishments (CNES) and the unification of the Table of Hospital and Outpatient Procedures are expressive   examples of the parameters for communication between systems.

The limitations of this study consist of the fact of the analysis of the extractions of secondary data whose analysis may present a certain subjectivity, due to underreporting beyond the search in the databases performed only by a researcher and from a time frame of the last 5 years, a fact that restricts the study to the most recent set of scientific productions on the subject. On the other hand, we highlight the relevance of the concept analysis as a basis for nursing practice and the potentiality of integrative review as a tool for the health field because it provides the synthesis of available and significant research on a given theme for the incorporation of its results in practice.

4. Conclusion

The result of this study allowed identifying the AIH's and relating them to hospitalization, permanence, financing and number   of deaths and mortality rate, as essential attributes for the planning tool in health services, the articulation and integration between notification, demand and supply in the six major hospitals of the State in the face of cardiovascular diseases.

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