

Research Article

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Needs for Palliative Care of Cancer Patients in Brazil: Analysis of Data from 2008-2014

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Abstract

Background: The Brazilian Health System (SUS) faces major challenges to ensure the constitutional right of universal access to health care assistance and technological advances to the entire population. Concerns with the ageing population, the increasing incidence of cancer and the emergence of chronic non-communicable diseases include palliative care as one of the objectives of the Brazilian Health System (SUS). However, considering that each disease and individual present different social and cultural factors, needs, pattern of disease progression, associated co-morbidities and access to health care, the estimation of necessary resources and the definition of specific criteria to structure and adapt palliative care in the health services have been a difficult task in Brazil. Thus, it is necessary to estimate the needs and the resources and to specify parameters to structure and tailor an adequate modality of assistance in palliative care.

Aims: 1) To estimate the number of cancer patients with palliative care needs in the population; 2) To simulate palliative care methods for population based estimation.

Methods: The present methodology has a quantitative approach, with descriptive, exploratory, retrospective and observational studies of hospitalized cancer patients. This is a cross-sectional study using death certificate and hospital admission data, which was collected from the Mortality Information System (SIM) and Hospital Information System (SIH) of the Brazilian Health System (SUS), obtained from the database of the Health Information Department (DATASUS).

Results: Yearly around 1.1 million deaths were reported to the Brazilian Mortality Information System, being 15.9% of these related to people living with cancer. Between 2008 and 2014, there were almost 4.5 million hospitalizations (4,431,685) of patients with cancer in Brazil, and, of all the hospital admissions of cancer patients, 1.189.908 (26.85%) were related to interurrences of the disease and/or of treatment.

The average rate of hospital mortality was 7.7 for cancer in general and 21.4 for clinical interurrence of cancer patients, while the average length of stay (LOS) was 5.7 days for cancer in general and 7.9 days for clinical interurrence of cancer patients.

Conclusion: considering that the offer and the technical guidance regarding palliative care for users served by health establishments authorized by Brazilian Health System for the specialized assistance in oncology are mandatory, we need to estimate the needs, resources and specify parameters to structure and tailor an adequate modality of assistance in palliative care.

Keywords: Cancer; Palliative care needs; Estimate cancer palliative care population; Clinical interurrences in oncological patients; Hospital admissions of cancer patients

Introduction

Systematic analysis on the subject shows that the disease prevention and curative treatments have been the main goals of the health professionals, being the incurability processes and often reputed death considered as failure. When the character of the cure has to be immediate, the implementation of actions directed to the comprehensive care of people with advanced chronic diseases or in the final stages of life, as well as the necessary help to maintain or achieve a life with dignity and quality, has been a challenge. Besides, when the model of curative medicine is focused essentially on the disease, this model does not meet all the needs of people living with chronic advanced diseases or people who do not respond to curative treatment. According to the World Health Organization (WHO), each year more

than 40 million people require palliative care and 20 million people need palliative care at the end of life worldwide [1,2].

The Pan American Health Organization (PAHO) designs, for the year of 2020, the occurrence of 840.000 cancer deaths in Latin America

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and the Caribbean, and call attention to the fact that palliative care has not been valued in people with cancer, when they should be part of the treatment from the time of diagnosis [3].

However, the World Health Organization (WHO) demonstrates that approximately 80% of cancer patients need terminal palliative care and at least 80% of persons who died as a result of cancer and other life-threatening diseases could benefit from palliative care [4,5]. To the year 2030, 27 million new cases of cancer, 17 million deaths (caused by cancer) and 75 million people living with the disease are expected worldwide. The biggest effect of this increase will focus on low-and middle-income countries [6]. Brazil currently has a population of approximately 206 million people, with a large regional diversity and a variety of ethnicities - 47.7% of whites, 43.1% of mulattos (mixture of whites and blacks), 7.6% of blacks, 1.1% of Asians and 0.4% of indigenous - distributed in a wide territory [7].

The demographic and epidemiologic transition in the country has been deeply marked by low fertility rates, fast ageing and increasing life expectancy resulting in rise of chronic non-communicable diseases. This process of demographic transition, called "ageing population", associated with the transformation in the relationship between people and their environment, brought a major change in the profile of morbidity and mortality, decreasing the occurrence of infectious diseases and laying the chronic non-communicable diseases as the new center of attention in the problems of disease and death of the Brazilian population. Nevertheless, the setting of cancer trends rates and burden, associated with longer chronic disease trajectories and greater co-morbidity, is producing a major impact on public health policy, requiring further incentives to improve and expand palliative care provision. The distribution of different types of cancer in Brazil suggests an epidemiological transition in progress [8-11].

With recent fast ageing population, which designs the exponential growth of the elderly, it is possible to identify a significant increase in the prevalence of cancer, requiring immense effort for the provision of adequate attention to patients. In this context, the Brazilian Health System faces major challenges to ensure the constitutional right of universal access to health care assistance and technological advances to the entire population. Concerns with the ageing population, the increasing incidence of cancer and the emergence of chronic non-communicable diseases include palliative care as one of the objectives of the Brazilian Health System [12,13].

Cancer is a disease that can appear silently, being so often diagnosed at an advanced stage hindering treatment success and decreasing the chances of cure [14]. The Brazilian National Policy for Cancer Prevention and Control ensures integral assistance to any person with cancer, by means of High Complexity Assistance Unit in Oncology (Unacon) and High Complexity Assistance Center in Oncology (Cacon) [15]. In Brazil, about 60% of cancer patients are diagnosed at an advanced stage. In the case of lung cancer, 87.9% of the cases are discovered late [16-19]. Therefore, it becomes imperative to improve the quality of care, to facilitate the access to palliative care and to promote equity in health services [20,21]. Considering that each disease and individual present a different pattern of disease progression and a variety of factors including age, co-morbidities and level of care, the estimation of necessary resources and the definition of specific criteria to structure and adapt palliative care have been a big challenge to the Brazilian health care system [22-30].

So far, we have used as reference the experiences of countries which have a well-structured assistance policy and established parameters for estimation of health care resources at different levels of attention.

However, it is important to analyze the applicability of these models in the reality of our country, as well as to sensitize health professionals for a full and humanized understanding regarding the complexity of attention that a patient with serious or advanced illness in the final stage of life, including their families, demands.

The main goals of this study were to analyse cancer patients who could benefit from palliative care in Brazil, through the outline of national death certificate and hospital admission of cancer patients in the Brazilian Health System (SUS) for treatment of clinical intercurrents related to cancer, and to estimate the target population with palliative care needs between 2008 and 2014. An ecological and historical series study was performed using national secondary data from mortality information system and hospital admissions related to cancer. In addition, the specific goals for this research are: to analyze the demand of patients for palliative care and to verify the use of hospital beds for admission of patients with oncologic clinic intercurrents.

Health policy

The 1988 Brazilian Federal Constitution recognized health as a citizen's right and a duty of the state, and established the basis for the creation of SUS, which was based on the principles of universality, integrity, and social participation [31]. Brazilian health-policy has been considering, for several decades, the universal access to health care, social reintegration, the need to enhance the hospital care for chronic patients suffering from multiple problems, convalescence and/or in need of permanent care requiring continuous assistance and physical and functional rehabilitation. The Brazilian Health System (SUS) is one of the largest public health systems in the world. Formed by a complex network of public and private institutions dedicated to providing, financing, and managing health services. Presently, three-quarters of the Brazil's 206 million inhabitants depend on free care from SUS [32,33]. In the last decades, several initiatives by the Brazilian Ministry of Health have incorporated palliative care as an important strategy for the health policy [34-43].

According to the Brazilian National Oncological Care (Decree GM/MS 2.439/2005), cancer control, like other chronic diseases, must contain all actions and health services available in the Brazilian Health System (SUS): health promotion, prevention, diagnosis, treatment, rehabilitation and palliative care [44]. With the goal of improving the quality of life, relieving physical suffering, catering for the psychological, spiritual and social needs of people with serious and advanced diseases and providing support to families and caregivers, it becomes necessary to promote reflection on the existing models of care, to meet the size, nature and severity of the needs of people with regard to palliative care and to motivate the inclusion or expansion of this type of care in the practice of comprehensive health care, following the principles of SUS: Universality, Equity and Completeness of health care [44].

Chronic diseases

Brazilian health-policy has been considering, for several decades, the need to enhance the chronic patients suffering from multiple harms to health, convalescents and/or permanent care requiring continuous care, physical and functional rehabilitation, with a view to social reintegration. Database records of Mortality Information System of the Brazilian Health System (SIM - DATASUS) show that, since 2003, the general mortality in Brazil comes surpassing 1 million people per year.

According to the Brazilian Mortality System, 1,227,039 deaths were registered in 2014, being the death rate up to 6038.58 per million of inhabitants, per year. In Brazil, approximately 74% of deaths registered, in the period between 2008 and 2014, were related to chronic non-

communicable diseases (NCD). This sets up a change in the burden of diseases and presents a new challenge for managers of health. The stronger the impact of NCD in the quality of life of affected individuals, the greater the chance of premature death and the adverse economic effects for families, communities and society in general [45]. The four most prevalent chronic diseases highlighted by WHO [46] accounted for 52% of deaths in the years of 2008 and 2014 in Brazil. Concerning the average distribution of diseases in both years, cardiovascular diseases account for most NCD deaths (54%), followed by cancer (31%), diabetes (9%) and respiratory diseases (6%) (Table 1). Within the framework of chronic diseases, cancer deserves a differentiated approach, for its high prevalence, consumption of large amounts of financial resources, and its big institutional and social burden [47-49] (Figure 1).

Cancer in Brazil

Cancer figures among the leading causes of morbidity and mortality in Brazil, with approximately 576.000 new cases and around 202.000 cancer related deaths in 2014. According to the Brazilian National Oncology Policy, cancer control must include health promotion, rehabilitation, and palliative care, following the Brazilian Health System (SUS) principles: Universality, Equity and Completeness of health care. The incidence of cancer grows in Brazil, as all over the world, at a rate accompanying the ageing population, resulted from the increase of life expectancy. This is a direct result of the great global transformations of recent decades, which has changed the situation of people's health by the accelerated urbanization, new lifestyles and new patterns of consumption [47-49].

The total incidence of cancer in Brazil grew by 70% in the period from 2001 to 2014 and 11% in the period from 2008 to 2014. Estimates for 2014, valid also for 2015, point to the occurrence of approximately 576.580 new cases of cancer, including cases of non-melanoma skin cancer, reinforcing the magnitude of the problem of cancer in the country. In the same years, a total of 302,350 new cases of cancer for males and 274,230 for females are expected. The cancer type non-melanoma skin (182,130) will have the highest incidence in the Brazilian population, followed by prostate tumors (69.000), female breast (57,000), colon and rectum (33,000), lung (27,000), stomach (20,000) and cervix (15,000) [49,51].

By excluding the cases of non-melanoma skin cancer, there was an estimated total of 395 thousand (68.5%) new cases of malignant tumours [51], being the gender distribution 204,000 for males and 191,000 for females. In men, the most incident kinds of cancers are the prostate, lung, colon and rectum, stomach and oral cavity; and, in women, the breast, colon and rectum, cervix, lungs and thyroid gland [13].

Cancer mortality

Yearly an average of 1.1 million deaths, considering all causes, are reported to the Brazilian Mortality Information System (SIM), being

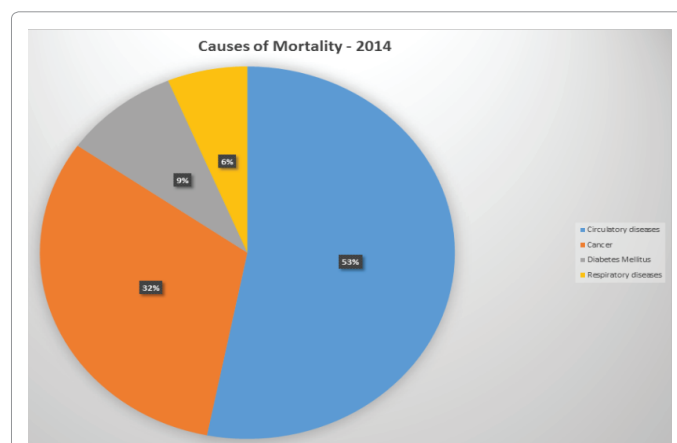
15.9% related to people living with cancer. Cancer mortality increased by 17.5% between 2008 and 2014 and, since 2003, cancer represents the second cause of death by disease group in the Brazilian population.

While the General mortality in Brazil had an increase of 27.1%, and the population grew 15.3%, cancer mortality had an increase of 60.3% in the period between 2001 (125.348) and 2014 (200.979). Thus, the gross rate of cancer mortality had an increase of 39% between 2001 (0.71/1,000 inhabitants) and 2014 (0.99/1,000 inhabitants).

According to the Mortality Information System of the Brazilian Health System (SIM - SUS), 201,968 cancer deaths were register throughout the country in 2014. In the same year, 725,685 patients with cancer were admitted at SUS hospitals network. Out of these hospitalizations, 57,697 (8.0%) resulted in death (Table 2 and Figure 2).

Clinical interurrences in oncological patients

In recent years, in Brazil, we have seen an increased number of hospital admissions of patients presenting late diagnosis of cancer added to pre-existing comorbidities. These cases show the need for integral care to prevent or treat complications related to the cancer disease. They may be related to the tumor itself, systemic manifestations of the disease (often the first manifestation of the disease) or side effects of treatment, and may appear in acute or insidious ways, delaying diagnosis and treatment [53]. The term "clinical interurrence of cancer" is related to a complication of the disease or its treatment, predictable or not, which requires hospitalization in specialized, general or day hospitals, for control of the complication [54]. The procedure "Treatment of Clinical Intercurrences in Oncological Patient" was first published by Decree GM/MS No. 2413, on March 23rd 1998, and was



Source: SIM – Mortality Information System – (DATASUS) [50]

Figure 1: Causes of death for main noncommunicable diseases (NCD) – Brazil 2014.

Main NCD	Number of deaths			Percentage (%) of diseases deaths/Total NCD deaths	
	2008	2014	Variation 2008/2014	2008	2014
Diabetes Mellitus	50.448	57.288	14	9	9
Circulatory diseases	317.797	337.611	6	56	53
Respiratory diseases	34.913	39.642	14	6	6
Cancer	167.677	200.979	20	29	32
Total of deaths/ main NCD	570.835	635.52	11	100	100
Total deaths/year	1,077.01	1,222.381	13	-	-
% NCD deaths	53	52	52	-	-

Source: SIM - Mortality Information System - (DATASUS) [50].

Table 1: Leading causes of death for main noncommunicable diseases (NCD) in Brazil.

Year	Cancer mortality - Mortality Information System						
	Total mortality	Total of cancer deaths	Percentage (%) of total cancer death	Male cancer death	Percentage (%) of male cancer death	Female cancer death	Percentage (%) of female cancer death
2008	1,077.01	167.677	15.60	90.176	53.80	77.49	46.20
2009	1.103.088	172.255	15.60	92.515	53.70	79.732	46.30
2010	1.136.947	178.99	15.70	96.168	53.70	82.792	46.30
2011	1.170.498	184.384	15.80	98.444	53.40	85.931	46.60
2012	1.181.166	191.577	16.20	101.974	53.20	89.596	46.80
2013	1.210.474	196.954	16.30	105.211	53.40	91.723	46.60
2014	1.222.381	201.968	16.50	107.306	53.10	94.631	46.90
Total	7.024.554	1.293.805	15.90	691.794	53.50	601.895	46.50

Source: SIM - Mortality Information System - (DATASUS) [50].

Table 2: Cancer mortality (2008-2014).

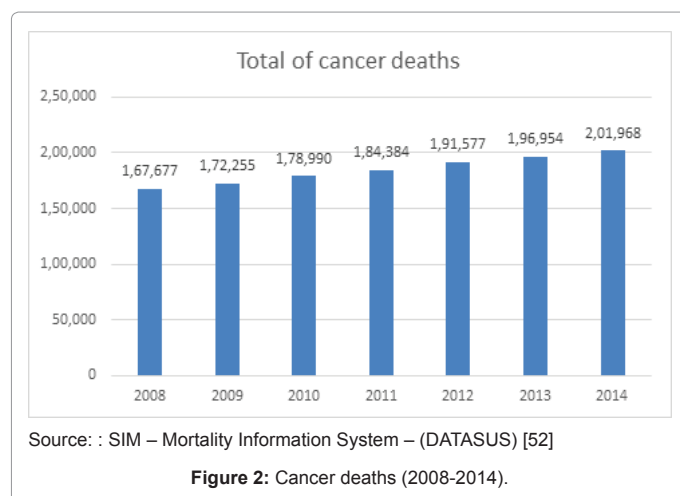


Figure 2: Cancer deaths (2008-2014).

included in the procedures of the Hospital Information System of the Brazilian Health System (SIH-SUS) [54]. Hospitalizations for treatment of clinical intercurrents in oncological patients can be conducted in any hospital, regardless of the authorization for high complexity in oncology. According to the retrospective analysis of hospital admissions data recorded in the Hospital Information System of SUS (SIH-SUS), approximately 90% of the hospital admissions made in the procedure “Treatment of Clinics Intercurrences of Cancer Patient” in Brazil were related to palliative care for terminally ill patients [55-58].

Estimating the needs of palliative care in Brazil

Even though palliative care is traditionally directed to people with cancer, in general it has been very difficult to define the exact number of people with indication of receiving this assistance mode in Brazil and the existing national data have not been processed to estimate the needs in this area. Up to now, the quantification of palliative care needs in our country has been estimated in isolation and based on international experiences. However there are doubts about the applicability of these parameters considering the population and territorial dimensions, as well as the regional diversities [59].

It becomes essential to know the size, nature and severity of the needs of people with regard to access to health services, as well as to identify the availability of resources to promote full assistance in hospice care in our country and, based on models and international studies that consider that, there is 1000 people in need of palliative care, per year, for every 1 million population. We can say that the Brazilian public health policy situation is very delicate, taking into account the size of the population (206 million) and the estimation of health services to meet the needs of 206,000 persons/year [26,60-63]. By analyzing the

population morbidity and mortality profile, it becomes necessary to establish feasible parameters to be deployed for assistance in palliative care such as national death register and hospital admissions data for treatment of cancer patients [56]. According to the retrospective analysis of hospital admissions of cancer patients, data recorded in the Hospital Information System of SUS (SIH-SUS), approximately 90% of the hospital admissions made in the procedure “Treatment of Clinics Intercurrences of Cancer Patient” in Brazil were related to palliative care for terminally ill patients [56].

Methodology

Material and methods

This is a cross-sectional study using national death certificate and hospital morbidity and mortality data. The present research has a quantitative approach, with descriptive exploratory, retrospective and observational studies of cancer mortality and hospital admission of cancer patients. Mortality data (2008-2014) was obtained from the Mortality Information System (SIM) in database of DATASUS [57]. Created by the Ministry of Health in 1975, SIM is the oldest nationwide health information system. The National Mortality System is based on death statement information collected by the State Health Departments. The national database generated from this information is administered by the Health Surveillance Secretariat in cooperation with DATASUS. It contains information on the cause of death, as well as sex and age and place of death. The cause of death is coded using the ICD-10-WHO code, making international comparisons possible [64].

Hospital information system (SIH)

Hospital morbidity and mortality data related to cancer were obtained from the Hospital Information System of the Brazilian Health System (SIH-SUS). All hospital admissions for neoplasms occurred in the period (from 2008 to 2014) were included, and hospitalizations that do not fit with the pathology in question were excluded. The entire process of SIH-SUS is based on the Hospital Admission Authorizations (AIH), which includes patient and hospitalization data: description of hospital morbidity and mortality, the benchmarking of hospital assistance, epidemiological surveillance, as well as the validation of other health information systems [65-67]. The records of hospital admissions, hospital beds, hospitals that admitted patients in the procedure “Treatment of Clinical Intercurrences of Oncological Patient,” hospital mortality and overall mortality were obtained from the database of the Health Information Department (DATASUS) of the Ministry of Health, being calculated historical series of residents in Brazil during this period (2008-2014), according to the 10th revision of international classification of diseases (ICD-10). Also, data from 4.5 million hospital admissions of cancer patients registered, between 2008 and 2014, was extracted from Hospital Admission Authorizations (AIH) in Brazil and

processed through a system (syntaxes) using Tabwin and SPSS program [52,68-72].

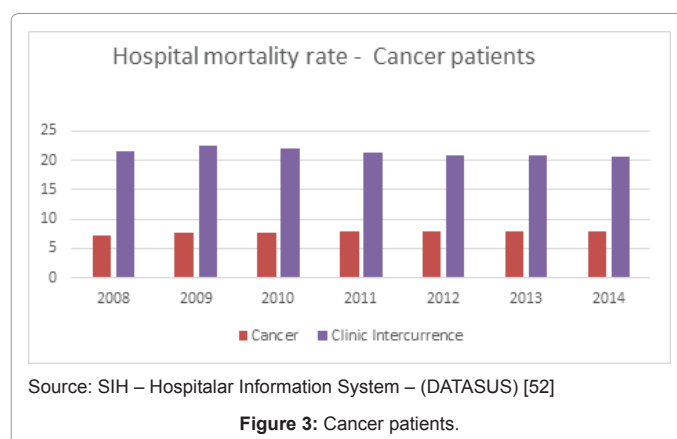
Results

From 2008 to 2014, the Brazilian Health System recorded 78.4 million hospitalizations in public hospitals, including all causes and all age groups, and, of the total admissions registered in that period; 4.4 million admissions (5.6%) were of cancer patients. We also observed, in the same period (2008 to 2014), a variation of 4.4% in the total number of hospitalizations in SUS. There was an increase of 26.7% in hospitalizations related to cancer and 48.1% of hospital admissions for treatment of oncology clinic interurrences, and, of the total number of hospital admissions (4,431,685) of cancer patients recorded between 2008 and 2014 in the Hospital Information System of SUS, 26.85% (1,189,908) were admitted for treatment of clinical interurrence of cancer (Table 3).

The hospital mortality of cancer patients, as seen in Table 4, was analyzed in frequency and rate. In the period from 2008 to 2014, considering the total number of cancer patients admitted to hospital, the mortality rate among the patients admitted for treatment of clinic interurrence (21.22) was three times higher than for general cancer (7.77) (Table 4 and Figure 3). In relation to the length of stay (LOS), the patients with cancer as a whole stayed an average of 5.7 days, and the patients admitted for treatment of clinic interurrence, 7.9 days.

Hospital units with register of oncologic patient admitted for treatment of clinic interurrence: analysis of data

Study conducted by the authors, through the National Register of Health Establishments-CNES, about hospital resources during the month of December 2014, showed that in Brazil, at that time, whereas the register is updated monthly, there was a total of 6,880 hospitals, being 5,244 (76.2%) general hospitals, 1096 (15.9%) hospitals and specialized hospitals and 540 (7.8%) day- hospitals. In relation to hospital beds, the



study presents a total of 452,488 beds, being 319,283 (70.6%) of them beds that belong to SUS and 133,205 (29.4%) beds that do not belong to SUS, including all types of beds: general, specialized, ICU, long stay, day hospital, psychiatric, obstetric, pediatric etc.

Between 2008 and 2014, more than 1 million (1,089,011) hospitalizations for treatment of clinic interurrence of cancer patients were registered in the Hospital Information System of SUS (SIH-SUS). These admissions were identified on 2,881 different health units around the country, and, of these units, those that had recorded at least 60 admissions per year (5 admissions per month) were identified, resulting in 342 hospitals. In conclusion, between 2008 and 2014, an average of 88% of all hospitalizations for treatment of clinic interurrence of cancer patient were registered in 342 hospitals (Table 5).

In the period of 2008 to 2014, an average of 3,066 clinical hospital beds were used for treatment of clinic interurrence of cancer patients, and, by analyzing the variation of utilization of hospital beds by region, we can say that, in total, there has been an increase of 43.9% of the beds used in the period of 2008 to 2014. The biggest variation occurred in the Northern region (142%), followed by the Southeast (47%) and the Northeast (44.1%), while the smallest variations were observed in the Midwest regions (12.2%) and in the South (29.9%) (Table 6).

Size of cancer population in need of palliative care

This study was based on estimation models of WHO, Gomez-Batiste, Higginson and Brazilian Parameter of Ministry of Health (MOH) to identify the number of people who were possibly in need of oncologic palliative care. Data on the number and causes of deaths were derived from death registration and hospital admission data.

The following simulations assumed the estimation models of 1) WHO: at least 80% of terminal cancer patients will require palliative care; 2) Gomez-Batiste: 60% of deaths; and 3) Higginson: number of people with selected causes of death (cancer and non-cancer diagnoses), multiplied by standard symptom prevalence (estimated from systematic reviews). Here we used the pain prevalence (Tables 7 and 8) [73-75].

The Brazilian studies of MOH estimate that 90% of cancer patients admitted in hospital for treatment of clinic interurrence should be considered in need of palliative care. This parameter is addressed to morbidity and not mortality (Table 9) [57].

Comments

The use of health information systems in Brazil allows us to know and to evaluate the process of health management, planning, training

Year	Hospital admission – Brazil (2008-2014)				
	Total - Brazil		Cancer		Cancer clinic interurrence
	Total	Freq	Percentage (%)	Freq	Percentage (%)
2008	1,07,43,603	5,45,863	5.10	1,25,605	23.01
2009	1,11,28,809	5,75,371	5.20	1,44,302	25.08
2010	1,13,57,965	6,04,809	5.30	1,55,512	25.71
2011	1,12,81,571	6,24,035	5.50	1,67,564	26.85
2012	1,10,92,589	6,59,788	5.90	1,85,406	28.10
2013	1,11,97,160	6,91,543	6.20	1,99,933	28.91
2014	1,15,98,762	7,30,276	6.30	2,11,586	28.97
Total	7,84,00,459	44,31,685	5.60	11,89,908	26.85%

Source: SIH - Hospitalar Information System - (DATASUS) [52].

Table 3: Hospital admissions in Brazil (2008-2014).

Year	Cancer		Clinic interurrence	
	Freq	Rate	Freq	Rate
2008	39,168	7.18	27,123	21.59
2009	44,129	7.67	32,262	22.36
2010	46,937	7.76	34,104	21.93
2011	49,026	7.86	35,559	21.22
2012	51,984	7.88	38,431	20.73
2013	55,340	8	41,535	20.77
2014	57,697	7.95	43,508	20.56
Total	3,44,281	7.77	2,52,522	21.22

Source: SIH - Hospitalar Information System - (DATASUS) [52].

Table 4: Hospital mortality of cancer patients.

Year	Hospital admissions of cancer patients for treatment of clinic intercurrentence	Number of hospital admitting patients for treatment of clinic intercurrentence	Selected hospital with 60 or + admission/year for treatment of clinic intercurrentence	Number of cancer patients admitted in selected hospitals (60 or +admission/year) for treatment of clinic intercurrentence	Percentage (%) of cancer patients admitted in selected hospitals for treatment of clinic intercurrentence
2008	1,14,752	1,461	327	1,02,733	90
2009	1,32,459	1,606	337	1,17,419	89
2010	1,44,380	1,730	339	1,26,717	88
2011	1,55,671	1,752	342	1,38,279	89
2012	1,73,320	1,776	342	1,54,039	89
2013	1,69,929	1,881	342	1,51,301	89
2014	1,98,500	1,879	339	1,72,163	87
TOTAL	10,89,011	-	-	9,62,651	88

Source: SIH - Hospitalar Information System - (DATASUS) [52].

Table 5: Hospital admission of cancer patients for treatment of clinic intercurrentences.

Regions	2008	2009	2010	2011	2012	2013	2014	Grand Total	Variation
Midwest	123	146	140	119	131	114	138	910	12.2
Northeast	490	572	565	555	635	654	706	4178	44.1
North	82	118	142	146	144	145	199	976	142.7
Southeast	1219	1423	1481	1549	1726	1692	1792	10882	47.0
South	571	643	614	639	660	647	742	4515	29.9
Grand Total	2485	2903	2942	3008	3295	3252	3577	21463	43.9

Source: SIH - Hospitalar Information System - (DATASUS) [52].

Table 6: Clinic hospital beds used for treatment of clinic intercurrentence in oncologic patients.

Year	Total of cancer deaths/year *(A)	Estimating needs of palliative care		
		WHO (A*0.8)	Gomez-Batiste (A*0.6)	I.J. Higginson (A*0.84)
2008	167.677	134.142	100.606	140.849
2009	172.255	137.804	103.353	144.694
2010	178.99	143.192	107.394	150.352
2011	184.384	147.507	110.63	154.883
2012	191.577	153.262	114.946	160.925
2013	196.954	157.563	118.172	165.441
2014	200.979	160.783	120.587	168.822
TOTAL	1,292.816	1,034.253	775.69	1,085.965

Source: SIH - Hospitalar Information System - (DATASUS) [52].

WHO: It is assumed that at least 80% of terminal cancer patients will require palliative care; Gomez-Batiste: 60% of patents at the end-of-life needs palliative care; Higginson: Number of people with selected causes of death (cancer and noncancer areas), multiplied by standard symptom prevalence (estimated from systematic reviews)

Table 7: Needs of palliative care according to total cancer deaths/year.

Year	Hospital admission Oncologic patient	Hospital death Oncologic patient (A)	Estimating needs of palliative care		
			WHO (A*0.8)	Gomez-Batiste (A*0.6)	I J Higginson (A*0.84)
2008	545.863	39.168	31334	23501	32901
2009	575.371	44.129	35303	26477	37068
2010	604.809	46.937	37550	28162	39427
2011	624.035	49.026	39221	29416	41182
2012	659.788	51.984	41587	31190	43667
2013	691.543	55.34	44272	33204	46486
2014	725.685	57.697	46158	34618	48465
TOTAL	4,427.094	344.281	275425	206569	289196

Source: SIH - Hospitalar Information System - (DATASUS) [52].

WHO: It is assumed that at least 80% of terminal cancer patients will require palliative care; Gomez-Batiste: 60% of patents at the end-of-life needs palliative care; Higginson: Number of people with selected causes of death (cancer and noncancer areas), multiplied by standard symptom prevalence (estimated from systematic reviews)

Table 8: Needs of Oncologic Palliative Care According to Hospital Mortality/Year.

of health human resources and health services organization. As they contain demographic, morbidity, mortality and financial data, the use of Hospital Information System (SIH/SUS) have been increasingly exploited by health professionals, mainly by its agility and facility of access.

Even though the use of in-patient data have been aimed at the provision and control of hospital spending, which is the purpose for which it is designed, it is at the same time the only in-patient data source for most states and Brazilian municipalities. Considering the

Year	Hospital admission Clinic intercurrence of oncologic patient (A)	Hospital death Clinic intercurrence of oncologic patient (B)	Estimating needs of palliative care			
			WHO (B*0.8)	Gomez-Batiste (B*0.6)	I J Higginson (B*0.84)	Parameter Brazil (A*0.9)
2008	125.605	27.123	21.698	16.274	22.783	11.3045
2009	144.302	32.262	25.81	19.357	27.1	12.9872
2010	155.512	34.104	27.283	20.462	28.647	13.9961
2011	167.564	35.559	28.447	21.335	29.87	15.0808
2012	185.406	38.431	30.745	23.059	32.282	16.6865
2013	199.933	41.535	33.228	24.921	34.889	17.994
2014	211.586	43.508	34.806	26.105	36.547	19.0427
TOTAL	1.189.908	25.522	202.018	151.513	212.118	1.070.917

Source: SIH - Hospitalar Information System - (DATASUS) [52].

WHO: It is assumed that at least 80% of terminal cancer patients will require palliative care; Gomez-Batiste: 60% of patents at the end-of-life needs palliative care; Higginson: Number of people with selected causes of death (cancer and noncancer areas), multiplied by standard symptom prevalence (estimated from systematic reviews) MOH - Brazil.

Table 9: Needs of oncologic palliative care according to hospital mortality of clinic intercurrence of oncologic patient/year.

territorial and population dimensions of Brazil, it is necessary to define health coverage parameters to people in need of palliative care.

Through the hospital admissions of cancer patients in the procedure “Treatment of Clinical Intercurrences of Oncological Patients”, we can estimate patients with indication of palliative care at the end of life, as well as identify parameters for the estimated need for cancer palliative care hospital beds. In this regard, we propose studies to size the target population, the demand and supply of health services, the level of attention required by selecting, to that, certain items likely to comparability between national and international data parameters, such as utilization of palliative care services, the prevalence of pain and other symptoms. Also, further study of hospital procedure “Treatment of clinical complications of cancer patient” should be considered as a parameter for scaling of palliative care services in Brazil.

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