



Arterial hypertension: sociodemographic profile and comorbidities of patients from northwest Paraná State, Southern Brazil

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ABSTRACT. The systemic arterial hypertension (SAH) currently a major public health problem, presents high medical and socioeconomic costs, and occurs concurrently with other diseases, of infectious origin or not. This study aimed to describe the sociodemographic profile of hypertensive patients with or without co-morbidities assisted in a health reference centre in a municipality of the northwest of the Paraná State, Southern Brazil. We gathered data from 250 medical records, concerning age, gender, race, marital status, educational level, professional duties, place of origin, reasons for seeking the services, occurrences of co-morbidities, and duration of systemic arterial hypertension. SAH occurred more often in the age group of 60-69 years old. The female gender was significantly different from the male. We observed the predominance of married (60.0%), Caucasian (76.0%), with fundamental level of education (54.4%), housewife (39.6%), living in neighborhood towns (58.0%), born in other regions than the Southern Brazil and have seek the service mainly for reasons not related to hypertension ($p < 0.05$). Cardiopathy of diverse etiology, *Diabetes mellitus*, Chagas disease and acute myocardial heart attack were identified in 98 patients (39.2%). Long-standing SAH was observed on 65.2% of the patients. The knowledge of the profile of the hypertensives, and principal associated diseases allows directing health actions in order to optimize resources, and make effective control of blood pressure and co-morbidities, including alternative intervention approaches to increase life expectation of patients.

Keywords: arterial hypertension, comorbidities, sociodemographic profile, Paraná State, Southern Brazil.

Hipertensão arterial: perfil sociodemográfico e comorbidades de pacientes da região Noroeste do Paraná, Sul do Brasil

RESUMO. A hipertensão arterial sistêmica (HAS), atualmente um dos principais problemas de saúde pública, apresenta custos médicos e socioeconômicos elevados e ocorre concomitantemente com outras doenças, de origem infecciosa ou não. Este trabalho teve como objetivo descrever o perfil sociodemográfico e comorbidades de pacientes hipertensos atendidos em um centro de referência em saúde em município da região Noroeste do Paraná, Sul do Brasil. De 250 prontuários foram coletados dados referentes à idade, sexo, raça, estado civil, escolaridade, atividade profissional, procedência, naturalidade, motivo da procura pelo serviço, ocorrência de comorbidades e tempo da HAS. A HAS teve maior frequência na faixa etária de 60-69 anos. O gênero feminino foi significativamente diferente do masculino. Foram predominantes os casados (60,0%), da raça branca (76,0%), com Ensino Fundamental (54,4%), profissão do lar (39,6%), residentes em municípios vizinhos ao do estudo (58,0%), naturais de outras regiões que não a região Sul do Brasil e procuraram o serviço, principalmente, por motivos não-relacionados com a pressão alta ($p < 0,05$). A cardiopatia de diversas etiologias, *Diabetes mellitus*, doença de Chagas e infarto agudo do miocárdio ocorreram em 98 pacientes (39,2%). HAS de longa data foi observada em 65,2% dos pacientes. O conhecimento do perfil dos hipertensos e suas principais doenças associadas, permite direcionar as ações de saúde, otimizar recursos e tornar efetivo o controle da pressão arterial e das comorbidades, incluindo abordagens alternativas de intervenção com o intuito de aumentar a expectativa de vida dos pacientes.

Palavras-chave: hipertensão arterial, comorbidades, perfil sociodemográfico, Estado do Paraná, Sul do Brasil.

Introduction

Currently the systemic arterial hypertension (SAH) is one of the major problems of public health, the third risk factor for cardiovascular

alterations, with high prevalence in adult population (CBHA, 1998; MARTINS, 1997). It has high medical and social costs and contributes to the onset of cerebrovascular disease, coronary artery disease,

heart failure, chronic renal failure, leading to reduced life expectancy of the individual (SBC; SBH, 2007; TEODÓSIO et al., 2004).

According to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (CHOBANIAN et al., 2003), more than 50 million Americans are hypertensive. In Brazil, the SAH affects 22 to 44% of economically active urban population, and accounts for 40% of the early retirement and abstention from work (SBC; SBH, 2007).

There are several risk factors for the occurrence of SAH, the non-modifiable ones such as age, gender, race and family history, and the modifiable, such as smoking, unbalanced diet, diabetes, obesity, sedentary lifestyle, emotional stress, use of contraceptive drugs, among others (BRASIL, 1993). Regarding these factors, regional differences in the prevalence and in the profile of patients with SAH can occur by the modification in the profile of Brazilian population in relation to feeding and life habits, socio-economic determinants, age group of the population analyzed and hereditary factors, as reported by numerous authors (JARDIM et al., 2007; MARTINS, 1997; OLIVEIRA; NOGUEIRA, 2003). Therefore, the diagnosis of the sociodemographic profile and the presence of comorbidities in patients with hypertension in a given region is an important step and may subsidize favorable interventions in relation to cardiovascular health of individuals, preventing the occurrence of aggravating of this nature.

In southern Brazil, several authors showed the sociodemographic characteristics of hypertensive patients and have verified that the prevalence of SAH ranged from 13.2 to 70.0% depending on the gender (OLIVEIRA; NOGUEIRA, 2003; SILVA et al., 2002; SOUSA et al., 2006; STURMER et al., 2006). Three of these authors studied patients in Paraná State with samples restricted to a given municipality, hospital or of a household survey. In northwest region of this state, municipality of Maringá, is situated a Regional Specialties Center (Centro Regional de Especialidades - CRE/PR) that attends patients from 30 municipalities of Paraná, from different regions of Brazil, which makes this population diversified and attractive for several type of studies.

The SAH occurs concomitantly with other diseases, including cardiopathy by several etiologies (FREIBERGER et al., 2004), *Diabetes mellitus* (KHAN; LIP, 2006), and Chagas disease (BOZELLI et al., 2006; LOPES et al., 2005). Nevertheless, little has been reported about SAH and these comorbidities. The purpose of the present study was to describe the sociodemographic profile of

hypertensive patients, with or without comorbidities, attended at the CRE/PR located in the northwest Paraná State, southern Brazil.

Material and methods

Studied population

In a retrospective, observational, cross-sectional study, from January to December 2005, we analyzed 250 medical records of hypertensive patients attended in the CRE/PR, which corresponds to the Intermunicipal Public Consortium for Health of the northern Paraná State (Consórcio Público Intermunicipal de Saúde do Setentrião Paranaense - Cismusep), a private-sector institution. This center is reference for patients from 30 municipalities belonging to the 15th Regional Health, covering the universe of more than 706 thousand inhabitants for medical care in the specialties of angiology, cardiology, gastroenterology, gerontology, nephrology, neurology, dermatology, orthopedics, ophthalmology, otolaryngology, pneumology, proctology, psychiatry, urology and general surgery, besides consultations in dentistry, physiotherapy, nutrition, psychology and specialized tests. This center is located in a large municipality, with population of 329,800 inhabitants (estimate IBGE, 2007), Paraná State, southern Brazil. The sample was sized based on the number of referrals in 2005 (5,000), of the Basic Health Units (Unidades Básicas de Saúde - UBSs) for the Cardiology sector of this center, considering a confidence level of 90%, sampling error of 5% and prevalence of 50%, used to maximize the sample size.

Studied variables

Of the medical records, it was gathered the data referring to age, gender, race, marital status, education, professional activity, origin, place of birth, reason for seeking the service and occurrence of comorbidities. It was also collected the data referring to the time that the patient had hypertension, and up to five years it was considered recent SAH and above that, long-standing hypertension, according to Sousa et al. (2006).

Statistical analysis

The statistical software used for the descriptive analysis of the data was Statistica 7.0. The continuous variables, with normal distribution were also expressed in the form of mean and standard deviation. In order to test differences between the variables, it was used the Student's t test, with significance level of 5%.

Ethical aspects

This study was approved by the Permanent Committee of Ethics in Research involving Human Beings (Comitê Permanente de Ética em Pesquisa envolvendo Seres Humanos - COPEP) of the State University of Maringá (Universidade Estadual de Maringá - UEM).

Results

Of the 250 medical records analyzed, the SAH was significantly more frequent in female gender ($p < 0.05$) (Table 1). The age of the patients ranged from 18 to 91 years, with mean of 59.8 ± 14.2 years. SAH occurred with higher frequency in the age group of 60-69 years, without significant difference in relation to the other age groups (Table 1).

Table 1. Distribution of the number and percentage of hypertensive patients from a large municipality of northwest Paraná State, Brazil, Jan.-Dec., 2005, according to age group and gender.

Age group	Male		Female		Total	
	n°	%	n°	%	n°	%
18-29	4	1.6	2	0.8	6	2.4
30-39	3	1.2	7	2.8	10	4.0
40-49	19	7.6	31	12.4	50	20.0
50-59	16	6.4	33	13.2	49	19.6
60-69	20	8.0	45	18.0	65	**26.0
70-79	15	6.0	34	13.6	49	19.6
80-91	4	1.6	17	6.8	21	8.4
Total	81	32.4	169	*67.6	250	100

* $p < 0.05$ for the gender; ** $p > 0.05$ for the age group.

Regarding to the ethnicity, SAH prevailed among whites ($p < 0.05$) occurring in 76.0%, followed by mixed race (6.4%), blacks (3.6%) and non-informed (14.0%). The percentage distribution of patients as for marital status showed the predominance of married individuals, corresponding to 60.0% of the population, which was statistically different ($p < 0.05$) in relation to widowed (16.4%), single (10.8%) and divorced (2.8%). In 10.0% of the records, the marital status was not informed.

The complete or incomplete elementary education level was the significantly most prevalent, occurring in 54.4% ($p < 0.05$), followed by illiterate (16.8%), medium level (6.0%), higher education (0.4%), and in 22.4% of the records, the education level was not informed. The professions that stood out were: home professional (39.6%) that was significantly different in relation to retirees/pensioners (16.0%), driver (3.6%), seller/mason (5.2%) and the other professions that together were observed in 18.8% of the records. In 16.8% of the records, the profession was not informed.

The number of patients living in the municipality of the referral center for health was significantly different (105 - 42.0%) from those living in other municipalities (145 - 58.0%). Most hypertensive patients (64.4%) were born in distinct geographical regions, which was significantly different of the 35.6% born in the studied region.

The reasons for seeking the service were: high blood pressure, pain in the left hemithorax, palpitation, shortness of breath, fatigue on exertion, blood donor reactive to Chagas disease, among others (Table 2). Considering each reason, high blood pressure was the most frequent (36.8%), but the majority of patients (63.2%) sought the services for other reasons not related to high blood pressure, with a significant difference ($p < 0.05$).

Table 2. Reasons for seeking the service from hypertensive patients from a large municipality of northwest Paraná State, Brazil, Jan.-Dec., 2005.

Reasons	N	%
High blood pressure	92	36.8
Pain in the left hemithorax	53	21.2
Palpitation	37	14.8
Shortness of breath	17	6.8
Fatigue on exertion	14	5.6
Blood donor reactive to CD	7	2.8
Other reasons*	30	12.0
Total	250	100

CD - Chagas disease; *electrocardiogram and X-ray altered, pre - and postoperative, lower limb edema, dizziness, malaise.

The presence of other diseases was identified in 98 (39.2%) patients, the most frequent was the cardiopathy of diverse etiology, followed by *Diabetes mellitus*, Chagas disease, and the acute myocardial infarction, including those with more than one of these diseases (Table 3).

Table 3. Hypertensive patients from a large municipality of northwest Paraná State, Brazil, with or without comorbidities, Jan.-Dec., 2005.

Co-morbidities	N	%
Absence of co-morbidities	152	60.8
Cardiopathy of diverse etiology	45	18.0
<i>Diabetes mellitus</i> (DM)	20	8.0
Chagas Disease (CD)	15	6.0
Acute Myocardial Infarction (AMI)	12	4.8
Cardiopathy + <i>Diabetes mellitus</i>	3	1.2
Cardiopathy + DM + AMI	1	0.4
Cardiopathy + DM + CD	1	0.4
Cardiopathy + Chagas Disease	1	0.4
Total	250	100

According to the main comorbidities, most of the sociodemographic characteristics of hypertensive patients do not differ in relation to the characteristics of the other studied patients (Table 4).

Table 4. Epidemiological characteristics of hypertensive patients from a large municipality of northwest Paraná State, Brazil, according to the comorbidities, Jan.-Dec., 2005.

Characteristics	Cardiopathy of diverse etiology	<i>Diabetes mellitus</i>	Chagas Disease	Acute myocardial infarction	+ than one disease
Average age (years) \pm SD	64.6 \pm 14.9	59 \pm 9.9	54.8 \pm 8.4	62.8 \pm 12.2	72.7 \pm 12.5
Gender (%)					
Female	73.3	70.0	80.0	16.7	66.7
Male	26.7	30.0	20.0	83.3	33.3
Race (%)					
White	75.5	55.0	73.3	91.7	83.3
Mixed	0	25.0	6.7	0	16.7
Black	6.7	0	6.7	0	0
Non-informed	17.8	20.0	13.3	8.3	0
Marital status (%)					
Married	64.5	60.0	66.7	66.7	16.7
Widowed	20.0	20.0	13.3	8.3	33.3
Single	11.1	5.0	6.7	8.3	0
Divorced	2.2	5.0	6.7	0	0
Non-informed	2.2	10.0	6.7	16.7	50.0
Scholarity (%)					
Illiterate	22.2	20.0	6.7	16.7	50.0
Elementary	55.6	60.0	86.7	41.7	50.0
Medium	6.7	5.0	0	0	0
Higher	0	0	0	0	0
Non-informed	15.5	15.0	6.7	41.7	0
Occupation (%)					
Home professional	46.7	45.0	53.3	8.3	50.0
Retiree	22.2	20.0	6.7	25.0	33.3
Mason	0	0	13.3	0	0
Driver	4.4	0	6.7	0	0
Others	15.6	15.0	13.3	50.0	17.7
Non-informed	11.1	20.0	6.7	16.7	0
Total (%)	45	20	15	12	6

SD = standard deviation.

Among the different characteristics are the gender and average age. The masculine gender prevailed among patients that had acute myocardial infarction, and the feminine, among those with cardiopathy of several etiologies, *Diabetes mellitus* and Chagas disease, but this difference was not significant ($p > 0.05$). The average age was significantly higher in hypertensive with cardiopathy of several etiologies and with more than one disease ($p < 0.05$).

The reasons of seek the service varied according to the main comorbidities (Table 5).

Table 5. Reasons for seeking the service from hypertensive patients from a large municipality of northwest Paraná State, Brazil, according to the principal comorbidities, Jan.-Dec., 2005.

Reasons for seeking the service	Cardiopathy of diverse etiology		<i>Diabetes mellitus</i>		Chagas Disease		Acute myocardial infarction		+ than one disease associated	
	n	%	n	%	n	%	n	%	N	%
High blood pressure	16	35.6	7	35.0	4	26.7	1	8.3	1	16.7
Palpitation	5	11.1	4	20.0	1	6.7	2	16.7	2	33.3
Pain in the left hemithorax	9	20.0	7	35.0	1	6.7	5	41.7	0	0
Blood donor reactive to CD	0	0	0	0	7	46.7	0	0	0	0
Others *	15	33.3	2	10.0	2	13.3	4	33.3	3	50.0
Total	45	100	20	100	15	100	12	100	6	100

*shortness of breath, fatigue on exertion, lower limb edema, altered electrocardiogram. CD – Chagas disease.

The patients with Chagas disease sought the service, mainly by being the blood donors reactive

for this disease (46.7%), those with acute myocardial infarction due to the pain in the left hemithorax (41.7%), those with cardiopathy of several etiologies and *Diabetes mellitus* by presenting high blood pressure, which occurred in 35.6 and 35.0%, respectively. Of the total of patients, 65.2% presented long-standing hypertension, and 38.4% had recent arterial hypertension.

Discussion

In this study, we reported the sociodemographic profile of hypertensive patients from 16 municipalities, which were referred by the UBS to a reference center for health located in the northwest region of Paraná State, southern Brazil.

Most hypertensive patients were within age group above 60 years old, suggesting a correlation between hypertension and age, which corroborates the III Brazilian Consensus on Hypertension, and other authors that report the higher prevalence of hypertension among elderly people (COSTA et al., 2007; MONTEIRO et al., 2005; SILVA et al., 2002; SOUSA et al., 2006; SOUZA et al., 2007).

Female gender predominated in this study, similarly to other studies made in southern and southwest Brazilian regions (MONTEIRO et al., 2005; MUXFELDT et al., 2004; SILVA et al., 2002). Other authors analyzing patients from southern

region of Brazil observed that SAH ranged from 22.3 to 70.0% in women, and from 13.2 to 48.6% in men (COSTA et al., 2007; OLIVEIRA; NOGUEIRA, 2003; SOUSA et al., 2006; STURMER et al., 2006).

The highest percentage of female gender observed in this study can be explained by the higher age and loss of hormonal protection that occurs in women above 40 years, due to the marked ovarian failure caused by menopause, as reported by Pessuto and Carvalho (1998). This result can also be explained by the increase in life expectancy of women, once according to the Brazilian Institute of Geography and Statistics - IBGE (2007), women live 7.8 years longer than men. Furthermore, Zaitune et al. (2006) verified that, in general, women have greater awareness of the disease, thus presenting a greater trend for the self-care and seek more medical care than men, which increase the likelihood of having hypertension diagnosed.

In our study the frequency of SAH was significantly higher in married individuals, in accordance with the results of other authors (LOPES et al., 2005; STURMER et al., 2006). This result may be related to the predominance of women belonging to an age group in which they are generally married, most of them are home professionals with a load of responsibilities and duties. Moreover, in the age group above 60 years, they commonly act as health caregivers of their spouses, playing stressful activity, and significantly overloaded in physical, emotional, social and financial aspects, which may have impacted their health and life quality (GARCÍA-CALVENTE et al., 2004; MACHADO et al., 2007).

According to Castro et al. (2003), the life full of commitments, obligations, anxiety, as well as poverty, social dissatisfaction, low education level, unemployment, and physical activity, increase the stress level, contributing to raise the blood pressure, triggering fatigue, sluggishness, irritability and insecurity.

The SAH was significantly more frequent in the Caucasians (white race), which can be due to the distribution of races and formation of the population in the region. This result corroborates other studies (COSTA et al., 2007; LOPES et al., 2005; SILVA et al., 2002; STURMER et al., 2006), but differs from the V Brazilian Guidelines on Hypertension (SBC, 2007) where it is shown that African descendent have higher prevalence and severity of hypertension related to ethnicity and/or socioeconomic factors.

The predominance of elementary level of education in the sample studied is similar to several

studies (COSTA et al., 2007; JARDIM et al., 2007; LOPES et al., 2005; SOUSA et al., 2006; SOUZA et al., 2007; ZAITUNE et al., 2006). This result can be related to the fact that the reference center for health (CRE/PR) is a public entity and provide care by Health Care System (Sistema Único de Saúde - SUS), mainly attending patients with low purchasing power, from predominantly agricultural regions, with higher age and lower education. Besides that, individuals with unfavorable socioeconomic conditions would be prone to depression and chronic stress caused by everyday difficulties, increasing catecholamine levels and hence the heart rate and blood pressure (VARGAS et al., 2000). In this way, it is worth emphasizing that lower schooling and socioeconomic conditions, increases the exposure to risk factors in the population that has less access to prevention and treatment of diseases (CASTRO et al., 2003).

The hypertensive people with home activities and retirees/pensioners prevailed in this study, as also found by other researchers (LOPES et al., 2005; MONTEIRO et al., 2005). Despite these results, the environmental stress and manual occupation are factors that should be considered in hypertensive people as reported by Martins (1997) and Monteiro et al. (2005).

Like the CRE/PR is a reference center for health of the northwest region of Paraná State, the majority of hypertensive patients (58%) came from neighboring municipalities to the municipality of Maringá where is located this center. This result indicates that the patient had access to the health system and that the distance from the residence of the patient is not a limiting factor for the attendance, at least at level of primary assistance. The same was not observed by Silva et al. (2002), in relation to the attendance of hypertensive patients at a reference university hospital in this same region.

The fact that most (64.4%) of the patients assisted in the CRE/PR are natural of different States could influence the profile of SAH in the region, once the studied sample was compounded of individuals from several regions of Brazil, which probably present distinct genetic characteristics (LAGUARDIA, 2005; PENA, 2005). Bozelli et al. (2006) also registered that patients of this same region with diseases of other etiologies, as Chagas disease, came from different Brazilian states. As could have been difference in the prevalence of hypertension in diverse geographical regions, this result shows a positive point in relation to other studies that in general present sociodemographic characteristics of hypertensive patients of a given municipality or region (JARDIM et al., 2007;

MONTEIRO et al., 2005; OLIVEIRA; NOGUEIRA, 2003; SOUSA et al., 2006; STURMER et al., 2006; ZAITUNE et al., 2006). Another point that should be taken into account is the association between migration and arterial hypertension, as well as other cardiovascular diseases, suggesting that could result from the fact that migrants are more exposed to psychological stress than non-migrants, due to the process of acculturation (MOOTER et al., 2004). Zaitune et al. (2006) observed that elderly people living in the municipality of Campinas (São Paulo State), from other states, had 50% more chances to be hypertensive than those born in São Paulo State.

Hypertensive patients attended in the CRE sought the services for other reasons in a proportion significantly higher than due to high blood pressure. According to Oliveira and Nogueira (2003), this result could be related to the asymptomatic nature of the disease, or to the stage where it is.

The presence of cardiopathy of several etiologies, *Diabetes mellitus*, Chagas disease and acute myocardial infarction associated with SAH was a common finding among hypertensive patients studied. These results are in agreement with several authors who also observed high percentages of association between hypertension and these diseases (ALVES et al., 2009; BOZELLI et al., 2006; FREIBERGER et al., 2004; SILVA et al., 2002; ZAITUNE et al., 2006; ZHANG et al., 2006).

In this study, sociodemographic characteristics for hypertensive patients with comorbidities did not differ in relation to the same characteristics of the other patients studied, except for gender and average age. Although a high percentage of male patients had as associated disease the acute myocardial infarction, and female ones with cardiopathy of several etiologies, *Diabetes mellitus* and Chagas disease, this difference was not significant. This result can be related to the fact that the sample used in this study contained a small number of patients for each one of these comorbidities. Lopes et al. (2005) in a study conducted in Presidente Prudente, São Paulo State also observed that male patients prevailed among those who had acute myocardial infarction as primary diagnosis. For the other comorbidities, the female gender prevailed, which can be due to the significantly higher occurrence in the studied sample, and because the gender should not be determinant to the occurrence of cardiopathy of several etiologies, *Diabetes mellitus* and Chagas disease (BOZELLI et al., 2006; GOLDENBERG et al., 2003).

Regarding the average age, this was significantly greater in hypertensive with cardiopathy of several

etiologies, and with more than one associated disease, and in this case all the patients also had cardiopathy. This result is similar to those found by Lopes et al. (2005) that registered association between average age and the main diagnosis involving cardiovascular diseases, and those verified by Freiburger et al. (2004) who observed the average age of 65.1 years in patients hospitalized due to heart diseases in a general hospital.

The reasons to seek the service did vary for the patients with Chagas disease and those with acute myocardial infarction. For the patients with cardiopathy of several etiologies and *Diabetes mellitus*, the reason to seek the service did not vary, in agreement with other authors who reported that cardiopathy and diabetes are associated with SAH at high percentages (FREIBERGER et al., 2004; SILVA et al., 2002).

The long-standing arterial hypertension was observed in 65.2% of the patients, which corroborates Sousa et al. (2006) who verified SAH for more than five years in 61.8% of the patients attended by the Family Health Program of the Ministry of Health of Brazil (Programa de Saúde da Família do Ministério da Saúde do Brasil - PSF/MS) in a small municipality of the southern region of Brazil.

Conclusion

The results of the present study, using a systematized sample composed of patients from different regions of Brazil, allowed concluding that most patients are married Caucasian women within the age group above 60 years, with elementary education, home professionals, living in municipalities neighboring to the studied municipality, born in other states except Paraná, sought the service mainly due to reasons not related to the high blood pressure and had cardiopathy of several etiologies, *Diabetes mellitus*, Chagas disease and acute myocardial infarction, as the main comorbidities. The knowledge about the profile and comorbidities of the hypertensive patients in the northwest region of Paraná State, southern Brazil, is the first step to better organize the operating strategy of primary care, especially concerning the assistance by the Family Health Program, making effective the control of blood pressure and comorbidities. In this context, besides alternative approaches of intervention, like physical exercise, constant guidance about the risk factors to SAH and their comorbidities must be prioritized, in order to intervene preventively and reduce the occurrence of cardiovascular diseases, which optimizes the use of

resources and increase the life expectancy of these patients.

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