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RELATIONSHIP BETWEEN PERFORMANCE AND HOSPITAL SIZE IN THE STATE OF SÃO PAULO (BRAZIL)

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ABSTRACT

The objective of the study was to identify relationships between performance and hospital size in general hospitals that attend the Unified Health System (UHS) in the State of São Paulo, Brazil. The study was quantitative and the sample was composed of 420 general hospitals that provided service to the Unified Health System from 2008 to 2013. Hospital indicators selected to evaluate performance included, production, productivity and quality. Sources of secondary information from the health information systems were been used, with Internet access at the electronic addresses of the Department of Information Technology of UHS and the State Department of Health of São Paulo. It was been observed that of the total of general hospitals in the sample, 45% are small, 33.8% are medium-sized, 19.3% are large and 1.9% are of special size. Large hospitals obtained better productivity and quality results for cesarean section rates. Small hospitals had the lowest rates of productivity indicators. The performance of general hospitals suggests different standards regarding the production, productivity and the quality that can be define according to hospital size characteristics. These differences correspond to the technological resources, specializations, complexity and location of hospitals.

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INTRODUCTION

General hospitals offer health care in the form of hospitalization in the four basic clinics (medical clinic, pediatrics, gynecology/obstetrics and general surgery), obligatorily in the areas of medical clinic and surgical clinic, having a Diagnostic Assistance Service and Therapeutic (DAST), which can count on Emergency/Intensive Care Unit, Intensive Care Unit, day hospital, outpatient service and others. They are important health equipment in the constitution of attention networks, and its articulation with other components is a relevant factor for the integrality of care (BRAZIL, 2013). In the hospital area, performance is associated with quality improvement processes, addressing customer satisfaction, efficiency, and clinical outcomes. In addition, quality is a parameter that makes it possible to perfect work processes to offer higher and safer care standards (Gilmore; Novaes, 1997). Performance assessments support the planning process in organizations while producing important information for decision-making and for establishing internal and external analysis. They also serve to guide the clients that use the services, the investors, regarding the financial sustainability and the regulators of the system, in relation to the services contracted and offered are of quality and according to the health needs (Oliveira; Malik, 2011). Considering that the performance analyzes of hospitals can

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identify factors or combination of factors that improve the performance of these establishments the objective of the study was to identify relationships between performance and size of general hospitals that attended the Unified Health System (UHS) in the State of São Paulo, Brazil, from 2008 to 2013.

MATERIALS AND METHODS

This research proposed a quantitative study whose sample was composed of 420 general hospitals of the State of São Paulo that provided services to the UHS from 2008 to 2013. Hospitals classified as general in the National Registry of Health Establishments (NRHE) were included; those who presented information in the Hospital Information System (HIS) in more than three years in the period, and those with information in the Outpatient Information System (OIS) in any year of the period. We excluded hospitals that, even classified as general in the CNES, presented services for chronic and / or long-term patients and those who presented services to UHS exclusively of high complexity with high-cost procedures. The hospital indicators selected to evaluate performance, including production indicators (hospital admissions, emergency and emergency room visits, specialized outpatient visits, births), productivity (hospital occupancy rate, turnover rate, replacement interval, mean permanence) and quality (cesarean rate, mortality rate). These indicators meet the criteria for coverage and frequency of data, using those registered in the health information systems organized from 2008 to 2013 and covering all the general hospitals of the HUS. Secondary sources of information from the UHS health information systems were been used, with Internet access at the electronic addresses of the Department of Information Technology of HUS and the State Department of Health of São Paulo. The data for the composition of performance indicators were been collected from the Hospital Information Systems (HIS) (relative to the number of hospitalizations, days of stay, number and type of births) and Outpatient Information Systems (OIS) - number of urgent and emergency care, number of outpatient visits. The classification by size according to the number of beds considered small to 50 beds, medium size of 51 - 150 beds, large size of 151 to 500 beds and special size over 500 beds (BRASIL, 1987). The variables of the study were been compared using the Analysis of Variance of Repeated Measures (ANOVA of Repeated Measures). The significance level adopted was 5%, and statistical analysis was been performed using SPSS 19.0 software.

RESULTS

It is possible to realize that out of a total 420 general hospitals in the sample, 189 (45%) are small, 142 (33.8%) are medium-sized, 81 (19.3%) are large, and 8 (1.9%) are large Special. Most small and medium-sized hospitals are private (85.2% and 72.5% respectively) and located outside the Metropolitan Region (91.0% and 71.8%, respectively). The largest share of large hospitals are public (45.7% state sphere and 25.9% municipal sphere) and are installed in the Metropolitan Region. Hospitals of special importance are largely from the private sphere (62.5%), located in the Metropolitan Region. Most hospitals offer emergency/emergency services, specialty outpatient services, maternity services and complementary beds. It is noteworthy that only eight (4.2%) of the small hospitals have complementary beds registered in the CNES.

The mean number of beds / hospitals / year in small hospitals varied from 32.2 to 29.5 beds, with a decrease of 8.39% in the period, and significant differences over the years (p intragroup = 0.002). The midsize ones ranged from 87.1 to 88.6 beds, the large ones ranging from 231.3 to 239.0 beds and of special size from 874.3 to 831.5 beds. These variations did not present significant differences (Table 1).Regarding the volume of hospitalizations (AIH), significant differences were found in small hospitals, with a decrease of 11.25% in the mean AIH / year (p intragroup <0.001) in the period. In the medium-sized hospitals, there was an increase of 8.56%, with significant differences only from 2008 to 2009 and 2010 (p intragroup = 0.001). In the large group, there was a 14.97% increase in the period with significant differences in all years (p intragroup <0.001). Special-care hospitals did not show significant differences in the period. In all the years of the study, significant differences were found in the means of AIH between hospital gates (p intergroup <0.001), observing that the variations, both for growth and for decrease, begin in 2009, accentuating in 2010 (Table 1).Significant differences were found in the means of emergency care over the years only for small hospitals, which increased by 30.62%, comparing 2008 and 2013 (p intragroup = 0.023). The other cargoes did not show significant differences in the period covered. However, it is very important to observe that there was a decrease since 2011 in large and special sizes. In all years, significant differences were found in the average service levels between the small and medium ports and the others, while the large and special ones did not present significant differences between themselves (p intergroup <0.001) (Table 1). Regarding specialized outpatient medical consultations, no significant differences were identified regarding the type of hospital size in the study years (p intragroup = 0.177). In relation to the average number of consultations, significant differences were found between hospital gates (p intergroup <0.001, valid for all years), and the large and special ones differ from the others and the small and medium gates did not present significant differences between them (Table 1). The mean number of births did not show significant differences in the study years, for all types of birth (p intragroup = 0.381). Significant differences were been found between the means of delivery of small and medium-sized hospitals in relation to all others, in all years. Large and special hospitals do not differ from each other (p intergroup <0.001) (Table 1). Regarding the production indicators, it was been observed that the averages of small and medium-sized hospitals differ from the averages of the large and special. These one do not differ from each other. The variations in the Hospital Occupancy Rate (HOR) between 2008 and 2013, according to the size, can be classify as follows: from 34.3% to 33.6% in the small ones, from 47.2% to 52.8% in the midsize ones, from 61.0% to 72.1% in the large ones and 71.1% to 77.0% in the special ones. Significant differences were found in the small ones among the study years, with a reduction of 2.04% (p intragroup = 0.042). In the medium-sized hospitals there was an increase of 11.86% in HOR, with significant differences in the averages of 2008 compared to 2009 and 2013 (p intragroup = 0.002). The large ones presented growth of 18.20%, with significant differences between the years (p intragroup <0.001). No significant differences were found in the means of HORs of hospitals of special size (p intragroup = 0.406). With the exception of large and special hospitals, which did not present significant differences between them, the others presented significant differences in all years (p intergroup <0.001) (Table 1).

Table 1. Hospital Indicators – Results by Portion Hospital. General Hospitals of UHS of the State of São Paulo 2008 – 2013

Indicators/Hospital Portion	2008	2009	2010	2011	2012	2013	p intragroup	Differencel in the Period[1] - %
Average numbre of beds/Hospital (DP)								
Small (N= 189)	32,2 (20,1)	30,9 (17,2)	29,8 (14,3)	28,9 (13,3)	28,9 (13,2)	29,5 (12,2)	0,002	-8,39
Mean (N=142)	87,1(32,6)	86,2 (31,4)	87,5 (31,2)	88,7 (31,4)	89,3 (30,7)	88,6 (28,6)	0,091	1,72
Large (N= 81)	231,3 (77,8)	233,1 (75,0)	237,3 (76,3)	237,6 (73,1)	238,9 (72,4)	239,0 (72,5)	0,178	3,33
Special (N= 8)	874,3 (365,1)	892,5 (365,6)	891,6 (363,9)	875,5 (365,1)	826,9 (334,3)	831,5 (339,0)	0,335	-4,90
p intergroup	<0,001	<0,001	<0,001	<0,001	<0,001	<0,001		
Average number of AIH/Hospital (DP)								
Small (N= 189)	1243,5 (927,8)	1254,2 (877,8)	1221,0 (839,3)	1190,6 (810,2)	1167,7 (816,8)	1103,6 (776,7)	< 0,001	-11,25
Mean (N=142)	4041,1 (2201,5)	4303,0 (2206,8)	4374,3 (2225,7)	4405,9 (2292,9)	4391,17 (2177,4)	4387,1 (2245,0)	0,01	8,56
Large (N= 81)	9936,2 (3522,9)	10762,0 (3639,0)	11627,1 (4024,5)	11728,7 (3897,5)	11342,6 (3901,5)	11424,0 (4073,7)	< 0,001	14,97
Special (N= 8)	30660,8 (8682,7)	31648,8 (8448,5)	32406,5 (10075,6)	32151,9 (10052,1)	32013,1 (9733,3)	32997,4 (9837,5)	0,369	7,62
p intergroup	<0,001	<0,001	<0,001	<0,001	<0,001	<0,001		
Average Number Meetings of Emergency/Hospital (DP)								
Small (N= 164)	28933,6 (34217,5)	30217,6 (32035,8)	31898,0 (34562,1)	40089,8 (71529,7)	36634,5 (42367,6)	37794,2 (49911,1)	0,023	30,62
Mean (N=137)	47984,2 (57388,1)	52662,2 (60513,7)	53150,7 (60551,2)	55447,8 (60819,7)	54547,0 (60734,0)	56633,4 (80186,3)	0,164	18,03
Large(N= 80)	104429,2 (92653,0)	108553,2 (88911,0)	107389,3 (88594,4)	107137,7 (85585,0)	96352,3 (81529,8)	94292,9 (77305,8)	0,062	-9,71
Special (N= 8)	158317,1 (129176,4)	162275,5 (129501,5)	154778,5 (119844,9)	145076,0 (110078,8)	129913,4 (97520,4)	122849,8 (95533,8)	0,667	-22,40
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		
Average number of medical consultations								
Amb. Specialized (DP)								
Small (N= 137))	5257,9 (20657,3)	3411,9 (7970,0)	4261,8 (18009,4)	3352,4 (6794,3)	3717,2 (8135,0)	2904,4 (5622,8)	0,177	-44,76
Mean (N=128)	9920,6 (15477,1)	10545,4 (15389,0)	10954,6 (15267,2)	11345,3 (17182,6)	12015,8 (17171,8)	12548,3 (16911,0)	0,177	26,49
Large (N= 81)	52274,4 (47015,0)	55889,0 (47282,6)	55686,7 (48896,0)	58090,0 (49901,1)	54862,6 (48978,9)	53016,6 (47814,8)	0,177	1,42
Special (N= 8)	411223,4 (296857,7)	435455,4 (323536,5)	423420,0 (315552,3)	403577,5 (291155,2)	396646,7 (294220,2)	399677,3 (279273,5)	0,177	-2,81
p intergroup	<0,001	<0,001	<0,001	<0,001	<0,001	<0,001		
Average number of deliveries/hospital (DP)								
Small (N= 173)	183,2 (212,6)	181,4 (182,2)	167,8 (167,2)	167,6 (168,3)	161,8 (172,5)	155,6 (179,9)	0,381	-15,07
Mean (N=124)	825,8 (792,8)	885,1 (815,5)	886,5 (827,5)	892,2 (809,1)	882,0 (787,6)	880,8 (844,1)	0,381	6,66
Large (N= 71)	1828,9 (980,7)	1883,0 (1117,7)	1964,6 (1160,9)	1997,5 (1195,0)	1970,6 (1159,6)	1957,5 (1209,1)	0,381	7,03
Special (N= 8)	2090,5 (768,6)	2158,5 (740,4)	2112,0 (734,1)	2123,8 (784,5)	2139,5 (749,3)	2088,6 (749,5)	0,381	-0,09
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		
Average Occupancy Rate (DP)								
Small (N= 189)	34,3 (17,7)	35,6 (18,6)	36,1 (19,1)	36,5 (18,9)	35,5 (18,6)	33,6 (19,1)	0,042	-2,04
Mean (N=142)	47,2 (21,1)	52,2 (19,9)	52,1 (19,5)	51,5 (19,3)	52,2 (19,4)	52,8 (20,6)	0,002	11,86
Large (N= 81)	61,0 (20,8)	67,9 (17,6)	72,4 (13,9)	72,8 (13,6)	70,9 (14,4)	72,1 (17,5)	<0,001	18,20
Special (N= 8)	71,1 (12,2)	72,6 (13,4)	74,3 (16,6)	74,4 (16,2)	76,1 (11,6)	77,0 (11,8)	0,406	8,30
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		
Mean of Complementary (DP)								
Small (N= 8)	40,9 (27,5)	45,4 (30,4)	46,4 (27,5)	40,4 (28,2)	36,5 (30,0)	29,0 (30,3)	0,220	-29,10
Mean (N=101)	47,3 (26,5)	52,9 (25,7)	53,2 (26,6)	53,0 (24,8)	56,1 (25,9)	60,1 (24,6)	<0,001	27,06
LArge (N= 79)	41,4 (21,8)	47,9 (23,1)	50,2 (21,8)	52,7 (20,7)	53,1 (19,6)	53,2 (22)	<0,001	28,50
Special (N= 8)	59,7 (18,5)	63,7 (18,7)	65,7 (18,5)	65,2 (15,6)	67,3 (13,0)	70,7 (12,7)	0,088	18,43
p intergroup	0,131	0,228	0,315	0,205	0,049	0,001		
Average Mean Time Permanence (DP)								
Small (N= 189)	3,13 (1,05)	3,21 (1,97)	3,29 (1,61)	3,29 (1,49)	3,34 (1,59)	3,43 (2,01)	0,767	9,58
Mean (N=142)	4,02 (2,51)	4,12 (2,55)	4,09 (2,19)	4,08 (2,07)	4,16 (2,17)	4,23 (2,22)	0,767	5,22
Large (N= 81)	5,54 (2,43)	5,69 (2,12)	5,69 (2,15)	5,60 (1,80)	5,66 (1,71)	5,72 (1,87)	0,767	3,25
Special (N= 8)	7,12 (1,06)	7,16 (1,07)	7,19 (1,05)	7,16 (1,20)	7,06 (1,19)	6,97 (1,09)	0,767	-2,11
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		

Table 2. Hospital Indicators - Results by Hospital. General Hospitals of UHS of the State of São Paulo. 2008 - 2013 (continued)

Indicators/Hospital Portion	2008	2009	2010	2011	2012	2013	p intragroup	Differencel in the Period[1]- %
Average Rotativity Index (SD)								
Small (N= 189)	39,8 (19,1)	41,8 (20,1)	42,1 (20,0)	41,7 (19,3)	40,3 (19,6)	37,4 (20,0)	<0,001	-6,03
Mean (N=142)	46,4 (19,6)	50,2 (19,3)	50,0 (18,4)	49,1 (17,2)	48,9 (15,9)	48,9 (17,0)	0,027	5,39
Large (N= 81)	44,7 (15,6)	47,7 (14,6)	50,3 (14,2)	50,6 (13,6)	48,8 (14,2)	49,0 (14,8)	<0,001	9,62
Special (N= 8)	37,5 (9,7)	38,0 (10,0)	38,7 (10,7)	39,2 (11,7)	40,3 (9,2)	41,7 (11,3)	0,089	11,20
p intergroup	0,009	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		
Mean of Replacement (SD)								
Small (N= 189)	8,25 (8,28)	10,06 (30,88)	9,68 (13,05)	9,70 (15,12)	10,30 (13,25)	14,14 (40,24)	0,746	71,39
Mean (N=142)	5,84 (12,23)	5,35 (14,48)	4,78 (7,18)	4,76 (5,85)	4,75 (5,50)	10,48 (68,08)	0,746	79,45
Large (N= 81)	3,28 (2,94)	3,07 (2,95)	2,63 (3,18)	2,46 (2.61)	2,81 (3,08)	2,62 (2,96)	0,746	-20,12
Special (N= 8)	3,32 (2,37)	3,12 (2,24)	3,04 (2,64)	3,02 (2,57)	2,41 (1,37)	2,33 (1,51)	0,746	-29,82
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		
Mean Cesarean Rate (SD)								
Small (N= 173)	43,0 (24,2)	44,6 (25,9)	46,5 (26,8)	50,0 (28,8)	52,2 (30,9)	51,5 (33,0)	0,001	19,77
Mean (N=124)	44,4 (17,4)	46,4 (16,2)	49,1 (15,7)	51,5 (15,9)	53,5 (15,9)	54,2 (17,8)	0,001	22,07
Large (N= 71)	35,6 (14,9)	36,4 (15,7)	36,2 (16,5)	38,0 (18,7)	39,6 (20,1)	38,0 (20,3)	0,001	6,74
Special (N= 8)	45,2 (13,0)	46,2 (15,4)	47,8 (15,0)	48,1 (15,5)	49,8 (14,8)	49,5 (15,6)	0,001	9,51
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		
Mean of the Mortality Rate (SD)								
Small (N= 189)	2,48 (1,85)	2,70 (1,98)	3,08 (2,23)	3,48 (2,30)	3,63 (2,39)	3,86 (2,38)	< 0,001	55,65
Mean (N=142)	4,28 (2,54)	4,57 (2,46)	4,74 (2,45)	4,84 (2,47)	4,91 (2,43)	5,03 (2,43)	< 0,001	17,52
Large (N= 81)	5,33 (2,37)	5,62 (2,45)	5,62 (2,33)	5,50 (2,11)	5,54 (2,01)	5,73 (2,04)	0,040	7,50
Special (N= 8)	5,74 (1,31)	5,63 (1,40)	5,58 (1,44)	5,09 (1,31)	4,93 (1,31)	4,80 (1,27)	0,486	-16,38
p intergroup	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001		

Source: Study Results. Authors Elaboration.
[1]Refers to the percentage difference in the averages for the years 2008 and 2013.
p <= 0,050 indicates significant differences.

The HOR of the complementary beds had significant differences over the years in medium (47.3% - 60.1%) and large (41.4% - 53.2%) hospitals, with an increase of 27.06% and 28.50%, respectively, in the period (p intragroup <0.001). No significant differences were been found between the years for small and special size hospitals. Significant differences were identified between the small and the special ones in 2012 (p intergroup = 0.049) and between small ones and the others in 2013 (intergroup p = 0.001) (Table 1). The hospital size types had similar behaviors over the years in relation to the Mean of Permanence Time (MPT), and no significant differences were found over the years (p intragroup = 0.767). Significant differences were found between small (3.43 days) and medium (4.23 days) in relation to the others; the average of the large (5.72 days) and the special (6.97 days) did not differ from each other in all years (p intergroup <0.001) (Table 1). The Rotational Index (RI) averages for small, medium and large hospitals presented significant differences over the years. In the small hospitals, they decreased by 6.03% (from 39.4 - 37.4) (p intragroup <0.001), in the midsize ones increased by 5.39% (from 46.4 - 48.9) (p intragroup = 0.027) and in the large ones grew 9.62% (from 44.7 - 49.0) (p intragroup <0.001). The special load had an increase of 11.20% (from 37.5 - 41.7) in the RI average, but did not present significant differences between the years (p intragroup = 0.089). Significant differences were been found in the means of IR between small to medium and large size in all years. The other sizes did not differ from each other (p intergroup <0.001) (Table 1). The IS intervals did not show significant differences in the period, and in 2013 they had the following IS: small size 14.14 days, medium size 10.48 days, large size 2.62 days and special size 2, 33 days. Significant differences were found in all years between the small size and all the others, the medium size differs from the large and the special, and the large and special dimensions do not differ (p intergroup <0.001, valid for all years) (Table 1). The Cesarean Rate presented similar behavior for the types of size, with significant differences over the years detected by the increase of the mean value in all hospitals considered in the sample (p intragroup = 0.001). The small size had an increase of 19.77% (from 43.0% - 51.5%), the medium size of 22.07% (44.4% - 54.2%), the large size of six, 74% (35.6% - 38.0%), and the special load of 9.51% (45.2% - 49.5%). Significant differences were found between the means of small and large units, and between medium and large ones in all years (p intergroup <0.001) (Table 1). In relation to the General Mortality Rate, small, medium and large hospitals presented significant differences over the years, with an increase of 55.65% (2.48-3.86), 17.52% (4.28 - 5.03) and 7.50% (5.33 - 5.73) respectively. Special carriage did not show significant differences over the period (5.74 - 4.80) (p intragroup = 0.486). According to Portes in 2008, 2009 and 2010, the differences being small in relation to the others and the medium size in relation to the large ones. In 2011, 2012 and 2013, the significant differences were small in relation to medium and large (p intergroup <0.001) (Table 1).

DISCUSSION

The predominance of small and medium-sized hospitals, from the private sphere and located outside the Metropolitan Region, and most large and special hospitals located in Metropolitan Region are characteristics related to the influence of the historical, economic and social context in the expansion and distribution of the hospital network in the State of São Paulo (Ibañez, 2011). In the sample, hospitals of different sizes presented significantly different results. Small and medium-sized hospitals differed among themselves and among the others in most of the indicators, while large and special hospitals presented similar behaviors. It was been observed that the indicators of production, productivity and quality presented better results the larger the hospital size, noting that the average time of stay is higher also when the size is larger. A similar result was been identified in the report of the National Health Services Evaluation Program (2006) in the cut of general hospitals (BRAZIL, 2007). It was also been observed, in a study of efficiency scores of state hospitals in São Paulo, conducted in 2016 (Felix, 2016). Small hospitals represent 60% of the hospitals and 18% of the beds in Brazil, and are mostly dispersed in small municipalities, have low complexity, technological density and occupancy rate (32.8%) (Ugá, 2007). Despite these characteristics, it is a strategic segment for the integral care in the HUS, for its participation in the hospital park and for its capillarity in the interior, with the potential to add resolution to basic care, as well as to ensure continuity of care at different levels of care complexity. In the sample studied, small hospitals accounted for 45%, mean beds varied between 29.5 and 33.2 and only eight had complementary beds in 2013, confirming their low capacity of resolution. The majority of the indicators of the small hospitals presented performance below the other levels, except for the mortality rate and the average length of stay that are smaller than the other ones. These results can be interpret by their low capacity of resolution. The technical insufficiency for use in more severe cases causes transfers between hospitals and periods of short stay in the small hospital (La Forgia; Couttolenc, 2009; Ramos *et al*, 2015). It was also beenobserved that there was an increase in urgent care in small and medium-sized hospitals and a decrease in large and special hospitals. It could indicate reorganization provoked in the discussion and agreements of the Health Care Networks in the State of São Paulo, when the small and medium hospitals are points of attention to the urgency and refer to hospitals of large and special size that have been organized as referenced door. In the literature, there is a positive relationship between occupancy rate and hospital size, ranging from 21% in hospitals with less than 25 beds to 77% in those with 250 or more beds (La Forgia; Couttolenc, 2009). In our study, the occupancy rate of small hospitals (34.3% to 33.6%) and average (52.8%) had differences between themselves and between the other sizes, while the large size (72.1% %) and the special (77%) do not differ from each other. The similarity of results between the large and the special ones was also verified in a performance evaluation study of the hospitals that provide care by the public health system in the State of São Paulo (Ramos *et al*, 2015). Small hospitals represented 6.7% of the beds, 6% of AIHs and 2.1% of the total value of AIH paid. These percentages are not so representative. The large volume of hospitalizations due to conditions sensitive to basic care may indicate that the hospital units work with poor integration with the other instances of the Health Care Network, especially with primary care, and without efficient system of reference and against reference, becoming isolated points of attention to health (Mendes *et al*, 2014). Large hospitals presented the best results of productivity and quality. The analysis of the results suggests that the definition of hospital size is more comprehensive than the number of beds. Linked to this indicator are conditions of technological resources, complexities, areas of coverage, teaching activities, location and even the nature of the organization that are combined factors that influence performance. The rates of cesarean sections showed significant growth in all types of hospitals in the period. These results can be considered as undesirable under the aspect of quality of care, being affected by: hospital capacity and resources, prenatal quality of basic care, epidemiological aspects, health conditions of pregnant women and clinical protocols used (Who, 2015). Large hospitals presented the lowest cesarean rates (35% to 38%) attributed to the insertion of this indicator as a target with financial impact on contracts (Barata *et al*, 2009). On the other hand, it can been inferred that the Program of the Stork Network, launched in 2011 by the Ministry of Health, was not successful in the general hospitals of the SUS of the State of São Paulo, over the time studied. The death rate indicator presented differences between the types of hospital characteristics in a differentiated and intermittent manner. There was a significant increase over the years only in the state average and in small, medium and large hospitals. Reasons for variations in mortality rates among hospitals may be differences in the severity of the health status of the population served at each hospital; variations in the effectiveness of medical technologies employed; adequacy of the care process to the patient and random errors (Travassos, 1999). Regarding the production indicators, it was been observed that the averages of small and medium-sized hospitals differ from the averages of the large and special, and these do not differ from each other. The general hospitals of the UHS network in the State of São Paulo that comprised the study sample maintained the average number of beds, with an increase in the number of hospitalizations and productivity indicators: hospitalization rate of hospitalization beds, complementary beds, and index of rotation. It was also been observed the growth of the average of permanence, which influenced the increase of the occupation rate, but without change of the substitution interval.

Conclusion: Based on the results of this study, it was possible to point to a growing use of the hospital park, although still with results indicating idleness in the use of hospital resources made available to the UHS in a scenario of increasing demands aggravated by the aging of the population. It includes the triple burden of diseases caused by the demographic and epidemiological transition. The study also recognizes that the use of secondary databases of UHS information systems presents limitations due to their constitution, whose main purposes include administrative objectives for control of billing. However, these data are one of the only sources of information on nationally based hospital morbidity and mortality. They have to be use in the planning, control and evaluation of hospital care. Therefore, the results obtained by the study may support the managers in the formulation of strategies for better utilization and use of the hospital network.

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