

Hospital Production Indicators: The Importance of Management in Planning Actions

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Abstract

The present study aimed to evaluate the procedures of the Ivan Goulart hospital in the municipality of São Borja-RS. The production data were obtained through the Tab for Windows system (TABWIN®) on the Ministry of Health page. The data are derived from the computerized monthly outpatient reports in that system. The hospital production from the years 2014 to 2016 was analyzed in the present study, with emphasis on the absolute values of the production indicators: percentage of hospital infection rate (IH), percentage of cesarean sections, radiology diagnoses, ultrasonography, electrocardiograms, mammography exams, emergency room visits and outpatient surgeries. The chi-square test (χ^2) was used for the statistical analysis of the prevalence of the type of delivery (normal or cesarean). The results reflected a low mean HI rate, a higher prevalence of cesarean deliveries, high rates of requests for exams and emergency visits and low examinations of bilateral mammograms. It can be concluded that the understanding of the indicators of production at hospital level reflects the reality of the health of the population, being essential knowledge of the same for the management of health.

Keywords: Hospital Information Systems; Clinical Records; Indicators

Introduction

There is a real lack of concern about the knowledge of municipal production indicators in health services in the hospital context. There are no exact proposals or public programs ready for the management of information on the production of hospitals in Brazil. What can be observed is that there are numerous civic population characteristics, that is, the reality of population health presents regional peculiarities, making difficult the decisions to be made in the management [1,2].

The expansion of the Unified Health System/SUS and the Supplementary Health System in Brazil, and the forms of management adopted, stimulate the use of indicators in the evaluation of the performance and quality of hospital care, and systems for evaluating these indicators are proposed. On the other hand, a survey of the production data of the Ivan Goulart Foundation, a hospital in the city of São Borja, Rio Grande do Sul, Brazil, has never been carried out, one of the reasons for which this study is supported.

São Borja is located on the western border of the State of Rio Grande do Sul, Brazil, bordering the neighboring country of Argentina, and has an estimated population of 62.990 inhabitants [3], having a population density of 17,1 residents/km² the title of "Land of the Presidents". The municipality presents coverage of the Family Health Strategy carried out by 15 Family Health teams, all with Oral Health Team (Mod. I) present, with a population coverage area of 71.09% [4] and still has only one hospital, the Ivan Goulart Foundation, which is responsible for meeting the hospital's demands in the region, that is, a reference for public and private care, being a philanthropic foundation that has operated since 1960 and is currently contracted by public managers to provide services to the System (SUS) is being the Brazilian public health system.

It is therefore necessary to develop an institutional capacity to incorporate and use, in the most appropriate form for the institution, diversified material and human resources and skills. So that the administration of the information becomes a dynamic process and part of the management of the service as a whole.

Methodology

This is a descriptive, retrospective and quantitative study, which was conducted according to the norms determined by Brazilian National Health Council Resolution 466/12 and by the Brazilian Code of Professional Dental Ethics. The study was approved to be developed by the Municipal Health Council of São Borja based on Resolution 333/2003 of the National Health Council, as well as received the release of said hospital for the realization and dissemination of it, as well as receiving opinion of the Board of ethics and research (CEP) of the State University of Campinas (Unicamp) and School of Dentistry of Piracicaba (FOP) (CEP/FOP 001- 2018).

This study was carried out with the objective of obtaining quantitative data from the production of the Ivan Goulart hospital, since a study of this nature had never previously been developed for this hospital. The results obtained will be transformed into future and better actions to the health of the users. The municipal public management as well as the hospital administration can allocate resources in sectors and programs that are more deficient, sectors that need greater care, both in financial and human resources can be identified, being able to increase the indicators of attendance and demand of examinations to the population. The indicators studied have a direct link with the Ministry of Health, being linked to the resources made by the Federation and the State, which are destined to the municipality, justifying the present study.

During the year 2017, the hospital productivity records were obtained to obtain the quantitative production indicators of the referred hospital. The data were obtained through the TABNET-TABWIN® system, linked to the Health Portal/Ministry of Health/ Brazil. The procedures performed between the years 2014 and 2016 were studied because they were the periods with the highest absolute number of production in the history of said hospital (in the last four decades), as well as the period in which it became a reference in the care, according to the Ministry of Health, for the region of the western border of the State of Rio Grande do Sul, and the indicators are chosen to be studied:

Indicators

- Percentage of hospital infection rate (IR)
- Percentage of cesarean sections in relation to normal deliveries
- Diagnosis of radiology
- Ultrasound diagnosis
- Electrocardiogram
- Screening for bilateral mammograms
- Emergency services with observation up to 24 hours
- Specialized ambulatory surgeries

These indicators were chosen and studied because they were agreed to public, private and/or contracted service. Avoiding the bias of the analysis of procedures performed at the particular population follow-up.

The chi-square test (χ^2) was used to gauge the differences between the prevalence of normal and cesarean deliveries, according to the type of delivery that had been used by the hospital staff. Seeking to verify if there was difference as well as the distribution of the existence or not of prevalence of one of the two types of births studied. The level of statistical significance was set at 5% and 95% confidence interval. All the absolute numbers of the deliveries performed at the hospital were submitted to the analysis, and the BioEstat® version 5.0 software was used for statistical analysis, maintaining a correct randomization for the dichotomous variable (percent prevalence of the mode of delivery). The quantitative variables were analyzed through their absolute numbers, looking for the local reality of said hospital.

The values related to the variables were obtained and collected from the electronic information database of the hospital and from the computerized clinical processes to the production network in the TabWin® System, a system of the Brazilian Ministry of Health. These indicators were authorized to be collected for the present study by the permanent evaluation commission of the Ivan Goulart Foundation (hospital supervision committee), and was represented by members of the hospital and the Municipal Health Municipal health council.

Results and Discussion

The results demonstrate that the Ivan Goulart Foundation performs a large contingent of procedures on the population, which can be observed in table 1. Relation of the production of the hospital Ivan Goulart, São Borja-RS, Brazil, between the years of 2014 to 2016.

2014	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	Totally
Percentage of hospital infection rate	0,5%	0,42%	0,52%	0,6%	0,2%	0,30%	0.20%	0.40%	0.40%	0.30%	0.30%	0.30%	
Percentage of cesareans (*)	81,9%	76,1%	75,4%	84,9%	80,1%	71.70%	73%	73.50%	84.80%	81.80%	78,9%	87.8%	p < 0.0001
Diagnosis of radiology	1256	1175	1198	1374	1233	1309	1112	1096	1318	1314	1112	920	14417
Ultrasound diagnosis	195	178	201	202	192	217	249	250	221	186	171	179	2441
Electrocardiogram	75	81	77	86	89	94	83	74	107	123	119	124	1132
Mammograms	189	157	172	161	218	198	224	166	124	243	238	305	2395
Emergency services with observation up to 24 hours	4213	3987	4119	4333	4496	4268	4455	4341	5026	5201	4908	4862	54209
Specialized ambulatory surgeries	623	619	649	637	660	607	863	754	879	945	870	1187	9293
2015	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	Totally
Percentage of hospital infection rate	0,3%	0,2%	0,4%	0,3%	0,6%	0,3%	0,3%	0,6%	2,5%	1,2%	1,4%	2,5%	
Percentage of cesareans (*)	73%	63.60%	73.30%	85,7%	74,1%	79,6%	78,6%	88,5%	83,3%	71,6%	88%	67,5%	p < 0.0001
Diagnosis of radiology	851	1356	1253	1182	1309	1245	1454	936	954	971	1149	1430	14090
Ultrasound diagnosis	216	246	321	221	279	188	161	130	136	165	202	261	2526
Electrocardiogram	92	115	106	154	118	119	135	141	128	125	123	95	1451
Mammograms	82	180	192	231	232	195	250	163	133	160	225	552	2595
Emergency services with observation up to 24 hours	3671	4596	4019	5242	4397	3990	4726	4594	3491	3463	4239	4445	50873
Specialized ambulatory surgeries	909	1133	839	895	514	391	419	543	577	633	561	612	8026
2016	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	Totally
Percentage of hospital infection rate	0,8%	0,6%	0,7%	0,6%	0,3%	0,9%	0,6%	0,4%	0,7%	0,3%	0,6%	0,8%	
Percentage of cesareans (*)	76,9%	71,2%	69,6%	58,5%	68,4%	81,1%	75,4%	77,4%	77,8%	73,2%	70,5%	75%	p < 0.0001
Diagnosis of radiology	1078	948	1246	1251	1432	1595	1516	1659	1404	1364	1281	1353	16127
Ultrasound diagnosis	261	214	233	233	248	222	251	324	294	269	242	234	3025
Electrocardiogram	79	86	113	120	110	124	153	133	145	251	210	280	1804
Mammograms	95	133	107	317	207	212	119	231	284	244	318	305	2572
Emergency services with observation up to 24 hours	4801	4326	4088	3923	4538	4329	4564	3603	4324	4996	4481	4863	52836
Specialized ambulatory surgeries	775	867	668	446	491	411	485	367	539	601	567	649	6866

Table 1: Relation of the production of the hospital Ivan Goulart, São Borja-RS, Brazil, between the years of 2014 to 2016.
*chi-square test

According to the administration of the hospital it is recommended the Professional training of its employees on a monthly basis, with more than 3 hours a month per employee, always seeking care and biosafety measures within the work environment. The use of individual protection equipment is periodically recommended and renewed, and the institution constantly carries out laboratory analysis with microbiological collection of the hospitalization, surgical, outpatient and sterilization equipment, aiming for correct biosafety [1,2,4,6] and can be observed that the hospital had a small incidence of hospital infection (IR), with values between 0.2% and 2.5%. Probably the result of a correct work of care and preventive measures in the area of biosafety [6].

The problem of IR in Brazil grows every day, considering that the cost of treatment of clients with IR is 3 times higher than the cost of clients without IR. Even with current legislation in Brazil, the average rates remain high, 15.5%, which corresponds to 1.18 episodes per hospitalized client in Brazilian hospitals. In addition, it is considered more aggravating, the fact that public health institutions have the highest prevalence rate of IR in the country, 18.4% [6] and is a very important indicator to be analyzed [4,6].

The indicator of the percentage of cesareans presented as a result a historical series with values above 58% going to 87.80% in relation to normal delivery, according to the statistical analysis used (χ^2). By presenting a historical picture of increasing prevalences [7] these findings may refer to other study findings [8-11] which also point to a trend towards an increase in the prevalence of cesarean sections in relation to the normal parturient births [8-10].

It should be highlighted the increasing medical-legal pressure [8-10] on medical professionals and this fact has discouraged normal deliveries. In addition, increasing confidence in cardiotocographic assessment has increased the number of cesarean sections due to suspected fetal compromise [11]. The increase in maternal age in the primigravidae, which provides more pathological situations with indication for cesarean section, an increase in the number of multiple pregnancies resulting from assisted reproduction, and, on the other hand, the increasing number of women with a previous cesarean history [8,9], in certain cases, implies the repetition of this procedure, are some of the factors connected with the increase of the proportion of cesarean sections in the countries of Latin America [12].

To this indicator, the Ivan Goulart Foundation is carrying out the work of humanizing normal childbirth with renewed environments to better serve the population, as well as the work of raising awareness and welcoming pregnant women [4,8,9]. Aiming to increase the demand for normal deliveries in relation to cesareans, as well as the development of a multidisciplinary team to better serve pregnant women, increasing the humanization of care [4].

Guidelines are being made to pregnant women through consultations carried out by the ward of the gestational outpatient clinic of the referred hospital, as well as antenatal care and follow-up [4]. The Foundation is conducting monthly groups of pregnant women with the purpose of exchanging experiences, such as breastfeeding, baby care and doubts about the birthing process. In this way, the hospital seeks to better serve future mothers in the search for a humanized environment [4].

With respect to radiology, ultrasound and electrocardiogram diagnoses, they had an absolute of 44.634, 7.992 and 4.387 exams respectively between 2014 and 2016, adding 57.013 diagnoses over the 3 years. Diagnostic tests are an integral part of the health system and greatly contribute to the advancement of medical care, but also increase administrative financial costs. The appropriate request of these examinations is an essential component in the decision making process by the medical professional [13].

On the other hand historically, the ordering and request for complementary examinations have been carried out in a non-standardized and indiscriminate manner, automatically, by habit, without the concern of limiting the number of examinations and without taking into account their costs and possible risks [13]. This situation has resulted in an excessive number of patients with no criterion of requests for diagnostic exams [14,15], which has generated negative financial impacts on the health system and on the patient [13]. Many of them may be unnecessary or inappropriate.

Several factors have probably affected the trends of physicians in the process of requesting diagnostic exams [17]. However, little has been discussed in the international literature, and still less in the national literature, on the various variables involved in the "ordering" of diagnostic exams [18].

Even in the face of the variety of factors involving patients, the environment and the medical professional, it is believed that the request for complementary diagnostic tests should be guided by reflexive education, focused on practical experience.

Hospital management in this context has the responsibility to find the best way to organize the requests for diagnostic tests, either through training courses, protocols or small practical groups called “communities of practice”. It is emphasized as well as the importance of an enriched environment within health organizations, with networking, providing the integration of primary care professionals [4] and hospital, generating motivational stimuli and multidisciplinary work in other areas of medical specialties. It is necessary to produce meaningful learning and consequently, to improve the practice of requests for complementary tests. In this same line of reasoning, regarding the bilateral mammography examination, the goal agreed by the hospital together with the Municipal Health Department is to maintain the indicator of 400 exams/month, and it can be analyzed that in the period of October and November the indicators point to a small improvement in the number of consultations of this exam, as can be observed in the history of the result presented, previously, in table 1.

This small increase obviously can be attributed to the incentive of preventive actions carried out in this period called the “October rose” program developed and recommended by the Brazilian Ministry of Health, on the other hand it is noticed that there is no substantial improvement [20] of this indicator, fact proven by the results obtained. Therefore, the prevention network should be expanded [4,20] to mammography, which is important for the quality of life and health promotion of the female population, which is the most frequent cause of death due to cancer in women in the world [21] and the one that most affects health of Brazilian women [22]. To this indicator, current studies [20,22-25] reflect the need for the responsible authorities to review the reference age for this important examination.

The Brazilian government only encourages the examination for women aged 50 years and older [4], with no open decision-sharing with duly informed women, or clear information about the damages [20] and there may be a review by the Brazilian health authorities of the indication of mammography related to a given age or age, thus making it possible to open discussion on the theme [20]. Within this same line of reasoning, continuing the present study, emergency care with observation up to 24 hours reached a total of 157.918 visits between the three years studied, a very significant number in a population of approximately 62.990 inhabitants [3]. This result confirms and is in accordance with a national population characteristic of high spontaneous demand for hospital care [26,27].

The failure of networking interferes with overcrowding and with the profile of the patient being treated. The emergency should be more integrated to the system and the hospital, as well as the training of human resources is essential, as well as the regulation of beds, another important fact raised by the current studies refers to the lack of preparation and motivation for the work done by the emergency teams of Brazilian hospitals [27]. The dissatisfaction of the professional of the emergency teams has been studied by many authors, who demonstrate that the professional feels disqualified according to the remuneration received with the level of demand. The complexity as well as the responsibility and the effort employed in a work process systematically crossed by the personal, organizational and social tensions make difficult the hospital service [28].

Other Brazilian studies on emergency services have demonstrated the difficulty of dealing with the excessive demand of patients. The absence of screening procedures or protocols that refer patients to other reference services is also a reason for dissatisfaction with the delay in peaks of care within Brazilian hospitals [27,29,30]. On the other hand, the local characteristic also points to the low effectiveness of the national health system, incapable of providing these individuals (clients) with easier access to the primary care network, leading them to emergency and emergency services. Therefore, the health secretariat/hospital management work should be carried out concomitantly, and periodic evaluations of the indexes and production indicators should be carried out, identifying the points of “critical knots” and seeking better results for the health promotion of the Brazilian population.

Conclusion

The national and global trend reflects a continuous increase in the absolute numbers of production indicators in hospitals. The study and understanding of these indicators of production at the hospital level will reflect the health reality of the studied population, as well as make possible the improvement of the population service. Understanding the local reality science through analysis of results and productivity indices, as well as discussing with national veracity strengthens knowledge and planning in public management decision making, improving the distribution of human and financial resources.

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