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TEXTO & CONTEXTO ENFERMAGEM
TEXT & CONTEXT NURSING TEXTO & CONTEXTO ENFERMERÍA

SIZING OF NURSING STAFF IN CLINICAL, SURGICAL AND PEDIATRIC HOSPITALIZATION UNITS

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ABSTRACT

Objective: to size the Nursing staff in clinical, surgical and pediatric inpatient units.
Method: a retrospective cross-sectional study, carried out in a university hospital in Midwest Brazil. The data were obtained from daily classifications of the care complexity level (n=5,808) among patients (n=882) hospitalized in the referred units, from July to October 2019, in addition to occupancy and hospital stay indicators. Descriptive statistical analysis, parameters and an equation specific to the design were used.
Results: clinical hospitalization had the highest occupation, permanence, demand for Nursing hours/day (162.58) and deficit of nurses (-12), followed by the pediatric unit (-2). In the clinical and surgical units, there was the same available/real number of nurses. The general staff sized showed personnel surplus (+24), due to the high number of mid-level professionals in all the sectors.
Conclusion: expected sizing inadequacy was verified, as there was a mismatch between workload and allocation of professionals in the units.

DESCRIPTORS: Sizing. Workload. Nursing human resources in the hospital. Human resource management. Nursing team.

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DIMENSIONAMENTO DE PESSOAL DE ENFERMAGEM EM UNIDADES DE INTERNAÇÃO CLÍNICA, CIRÚRGICA E PEDIÁTRICA

RESUMO

Objetivo: dimensionar o quadro de pessoal de enfermagem em unidades de internação clínica, cirúrgica e pediátrica.
Método: estudo transversal retrospectivo, realizado em um hospital universitário do Centro-Oeste do Brasil. Foram extraídos dados de classificações diárias do nível de complexidade assistencial (n=5.808) entre pacientes (n=882) internados nas referidas unidades, nos meses de julho a outubro de 2019, além de indicadores de ocupação e permanência hospitalar. Empregou-se análise estatística descritiva, parâmetros e equação próprios ao dimensionamento.
Resultados: a internação clínica teve a maior ocupação, permanência, demanda de horas de enfermagem/dia (162,58) e déficit de enfermeiros (-12), seguida da unidade pediátrica (-2). Nas unidades clínica e cirúrgica havia o mesmo número de enfermeiros disponível/real. O quadro geral dimensionado apresentou superávit de pessoal (+24), pela elevação de profissionais de nível médio em todos os setores.
Conclusão: constatou-se inadequação prevista pelo dimensionamento, pois existia desajuste entre a carga de trabalho e a alocação de profissionais nas unidades.

DESCRITORES: Dimensionamento. Carga de trabalho. Recursos humanos de enfermagem no hospital. Administração de recursos humanos. Equipe de enfermagem.

DOTACIÓN DE PERSONAL DE ENFERMERÍA EN UNIDADES DE INTERNACIÓN CLÍNICA, QUIRÚRGICA Y PEDIÁTRICA

RESUMEN

Objetivo: constatar la dotación de personal de enfermería en unidades hospitalarias clínicas, quirúrgicas y pediátricas.
Método: estudio transversal retrospectivo, realizado en un hospital universitario del Centro Oeste de Brasil. Los datos se obtuvieron de clasificaciones diarias del nivel de complejidad asistencial (n=5.808) entre los pacientes (n=882) ingresados en las unidades referidas, de julio a octubre de 2019, además de los indicadores de ocupación y estancia hospitalaria. Se llevó a cabo el análisis estadístico descriptivo con los parámetros y ecuación específicos de la dotación.
Resultados: la hospitalización clínica presentó la mayor ocupación, permanencia, demanda de horas por día de asistencia de enfermería (162,58) y déficit de enfermeros (-12), seguida de la unidad de pediatría (-2). En las unidades clínico-quirúrgicas, se registró el mismo número de enfermeras disponibles /reales. La planta evaluada presentó un superávit de personal (+28), debido a la elevación de los profesionales de nivel medio en todos los sectores.
Conclusión: se constató que la dotación resulta inadecuada, debido al desajuste entre la carga de trabajo y la asignación de profesionales en las unidades.

DESCRIPTORES: Dotación de personal. Carga de trabajo. Recursos humanos de enfermería en el hospital. Gestión de recursos humanos. Equipo de enfermería.

INTRODUCTION

In the search for quality and optimization of resources, health organizations have adopted principles of administration – and even of production engineering – with an emphasis on the use of managerial tools that leverage assertiveness to the decision-making power, in addition to maximum effectiveness at work[1]. For Nursing, these tools add rationality among management elements, which contribute to safety and quality of care, the core of the profession[2].

In the nurse's work, the tools, instruments and means of management are used both for direct and indirect care[2], such as the administration of human resources[3]. In this sense, the sizing of the Nursing staff is an indispensable and initial means for forecasting/planning the quantitative and qualitative aspects of the Nursing staff, required to meet a certain (in)direct assistance demand[3–4]. It is therefore a people management tool that intermediates implications for care, since the adequacy of human resources for Nursing can have an impact on quality of care[5].

In Brazil, staff sizing has peculiar characteristics, due to the socio-technical division of work into professional categories, and is regulated by the Resolutions of *Conselho Federal de Enfermagem* (COFEN)[4]. COFEN Resolution of 2004, updated in 2017, represented an advance for the profession, as the new parameters seem to be more in line with the professional reality[2]. Despite this, it is common to find inconsistencies in the practice regarding what is prescribed by such standardization, both at the hospital level[2,6–7] and in primary health care[8].

Recently, when investigating the sizing of the Nursing staff in the context of children's Intensive Care Units (ICUs), comparing it by different methods, nurse researchers recommended that the Resolution on the subject matter progresses to the status of Law[9]. This allusion strengthens the justification for studies in different care contexts, because it is prudent and necessary that sizing is investigated, disseminated and apprehended by the Nursing and Health areas, so that improvements can be debated, not only in institutional spheres, but also in social and political ones.

In surgical hospitalization units, there is a characteristic profile of high patient turnover and high load of care activities that demand speed, as well as high demand for material resources[10]. In turn, patients in clinical units have greater care complexity, with a longer hospital stay due to their clinical condition. Therefore, they need increasingly more elaborate work processes, which can cause work overload for the Nursing team[11].

In the pediatric hospital context, the assistance provided to children and their families requires some specificity from the Nursing professionals, both in aspects related to the child's physiopathology and in the domain of technical skills, as well as in relational skills associated with the care of this peculiar clientele[12]. Therefore, degrees of dependence and indicators of Nursing care needs are distributed, being peculiar to this clientele[6,12].

It is believed that knowing and disseminating the sizing of the Nursing staff, in different units/sectors, is of interest to science in the area. Thus, it is expected to consolidate managerial knowledge that can culminate in improvements for the profession, as it reasserts the need to use this tool in a more systemic and rational manner. In spite of this, studies that bring together the sizing of the Nursing staff in different sectors/units, in a research report, appear to be incipient, since recent publications are directly outlined in a specific care context[2,6–9].

Given the above, this study aimed at answering the following question: Is the Nursing staff in clinical, surgical and pediatric hospitalization units adequate to the prediction determined by the sizing process? Therefore, the objective was to size the Nursing staff in such hospitalization units.

METHOD

A cross-sectional, retrospective and descriptive research study. It was developed in the clinical, surgical and pediatric hospitalization units of a medium-sized tertiary-level public university hospital in the Brazilian Midwest Region. The institution is managed by a public company under private law.

The surveyed units total 68 hospital beds, distributed as follows: Medical Clinic, 30; Surgical Clinic, 24; and Pediatric Clinic, 14. The Nursing professionals in the units are divided into five teams, in shifts: morning, afternoon and three night periods. Most of these workers work 36 hours a week.

The study population consisted of all patients hospitalized in the units, from July to October 2019. The composition of the analysis sample was based on the inclusion of patients with a minimum hospitalization time of 24 hours, according to the Patient Classification Systems (PCS), which are used daily by nurses in clinical and surgical hospitalization units[3] and in Pediatrics[12]. Those hospitalized for less than 24 hours and pediatric patients unaccompanied by their guardians were excluded. Patients who, for any reason, were not classified by the nurses in the units were also not included in the analysis sample.

For data collection, the Nursing management spreadsheet – official document of the institution regarding the number of workers available by category in the hospitalization units – was used, made available by the Nursing Division. In addition to that, the physical records of patient classification in the three sectors were used, as well as data from indicators of hospital admissions (number of patients hospitalized, occupancy rate and mean length of stay), provided by the Process Management and Information Technology Sector of the hospital under study.

The classification of the patients by the PCS used in the sectors was carried out once a day, during the 24 hours – from admission to discharge – by the assistance nurses and Nursing residents, previously trained by the heads of the unit for such activity, according to the standard operational procedures of the hospital under study.

The PCS employed in the medical and surgical hospitalization units (hereinafter referred to as adult PCS) consisted of nine care areas, comprising the following: mental status, oxygenation, vital signs, motility, walking, nutrition, body care, elimination and therapy[3]. The pediatric PCS consisted of 11 indicators, namely: activity; control assessment interval; drug therapy; oxygenation; mucosal skin integrity; mobility and walking; body hygiene; nutrition and hydration; eliminations; participation of the companion; and support network[12]. Through the sum of points attributed to the areas of care/indicators, both PCS generated a classification, which was divided into the following care levels: minimal, intermediate, high dependence, semi-intensive and intensive[3,12].

It is noted that, in the daily dynamics of classification of pediatric patients, compliance with COFEN Resolution No. 543/2017 is observed, respecting its Art. 3 § 4, which mentions that “For nurseries and pediatric hospitalization units, every newborn and child under 6 years old must be classified, at least, as intermediate care, regardless of the presence of a companion[4].

The data collected from the physical records were compiled into spreadsheets in *Microsoft Office Excel®*. The categorical variables were analyzed using descriptive statistics, in percentage proportion measures, and the continuous variables were presented as a central tendency measure. Since the hospital indicator data were provided directly by the aforementioned information technology sector, and not by tabulation of data from unit medical records, the mean length of stay was not tracked by measures of dispersion. However, it was chosen to keep the description of this indicator because it supports a more systemic interpretation of the sizing of the Nursing staff.

The Sized Staff (SS) calculation for each unit was performed according to its own equation, recommended by COFEN Resolution No. 543/2017[4] and its respective support manual[13], namely: SS=TNH X KM.

For the purposes of calculating sizing, the following were considered: the parameters of daily hours for each category/level of care dependence; the Total Nursing Hours (TNH) of each unit − product of the sum of the hours required in one day (mean of the 122-day period of the time frame) for each category of the PCS; and a Marinho Constant (KM) of 0.2236, which refers to a weekly workday of 36 hours, 7 working days a week (uninterrupted hospital work) and a minimum Technical Safety Index (TSI) of 15%[4,13]. This TSI parameter (15%) represents 8.3% for vacation coverage and 6.7% related to security to cover unforeseen absences[4] and, as in the survey hospital this information was not centralized and available systematically, the minimum parameter of the current regulation was chosen.

Through the SS result, this was adjusted to the professional categories of nurses and nursing technicians/assistants, also using the normative parameters in force and considering the category/level of care complexity with the highest demand for Nursing hours, per hospitalization unit[4,13].

In order to compare the sized staff with the available/effective number of hospitalization units, the work schedules for the period from July to October 2019 were consulted. In addition, information was requested regarding the workers' age in July 2019, in order to verify whether there would be any need to comply with the requirement of Art.14, of the current Resolution[4], which was not necessary.

The study respected the ethical requirements provided for in Resolution No. 466/2012 of the National Health Council. Thus, it was submitted to and approved by the institutionalized Research Ethics Committee.

RESULTS

A total of 5,808 daily classifications among the inpatients (n=882) were analyzed, in the time frame from July to October 2019. Table 1 displays the following indicators: number of inpatients, occupancy rates, and mean length of stay. Occupancy rates above 100% were observed in the medical hospitalization units (104.6%) in October, in the surgical ones (133.8%), also in October, and in the pediatric ones (113.2%), in July.

Table 1 – Number of hospitalized patients, occupancy rate and mean length of stay, by hospitalization unit and month. Midwest region, Brazil, 2019 (N=882).

Unit/Month	No. of Patients	Occupancy Rate (%)	Mean Length of Stay (Days)
Medical Clinic (n=171)			
July	34	102.8	18.0
August	43	100	15.2
September	45	92.6	15.7
October	49	104.6	16.2
Surgical Clinic (n=486)			
July	128	64.9	3.8
August	117	88.1	4.6
September	131	82.3	5.1
October	110	133.8	8.9
Pediatric Clinic (n=225)			
July	54	113.2	11.4
August	49	77.0	7.1
September	65	88.5	7.1
October	57	73.1	7.3

Table 2 shows the level of complexity/dependence on Nursing care, according to the patient classifications (N=5,808), performed daily in each hospitalization unit, per month.

Table 2 – Distribution of the patient classifications according to the complexity level of Nursing care in the clinical, surgical and pediatric hospitalization units, by month. Midwest Region, Brazil, 2019 (N=5,808).

Unit/Month	MC* n(%)	IC† n(%)	HDC‡ n(%)	SIC§ n(%)	InC‖ n(%)	Total n(%)
Medical Clinic (n=2,527)						
July	187(29)	124(19.3)	139(21.6)	126(19.7)	67(10.4)	643(100)
August	184(29.1)	135(21.4)	143(22.6)	52(8.2)	118(18.7)	632(100)
September	246(40.6)	160(26.4)	55(9.1)	65(10.7)	80(13.2)	606(100)
October	276(42.7)	195(30.2)	58(9.0)	61(9.4)	56(8.7)	646(100)
Surgical Clinic (n=1,718)						
July	241(55.5)	127(29.3)	40(9.2)	23(5.3)	3(0.7)	434(100)
August	281(64.0)	132(30.0)	22(5.0)	3(0.8)	1(0.2)	439(100)
September	271(63.3)	126(29.4)	22(5.1)	8(2.0)	1(0.2)	428(100)
October	232(55.6)	145(34.8)	29(7.0)	11(2.6)	0(0)	417(100)
Pediatric Clinic (n=1,563)						
July	65(14.7)	202(45.9)	154(35.0)	18(4.0)	2(0.4)	441(100)
August	36(9.8)	181(49.2)	145(39.4)	5(1.3)	1(0.3)	368(100)
September	28(6.5)	254(59.3)	142(33.2)	4(1.0)	0(0)	428(100)
October	54(16.6)	169(51.9)	98(30.0)	5(1.5)	0(0)	326(100)

*MC: Minimal Care; †IC: Intermediate Care; ‡HDC: High Dependence Care; §SIC: Semi-Intensive Care; ||InC: Intensive Care.

In its turn, Table 3 synthesizes the findings regarding the daily Nursing hours required, by care complexity level in the hospitalization units, by means of the daily mean of patients, in addition to the TNH for each sector.

Table 3 – Nursing hours required daily, by care complexity level and hospitalization unit. Midwest Region, Brazil, Jul-Oct 2019.

Unit	MC*		IC†		HDC‡		SIC§		InC‖		TNH**
	DMP††	NH‡‡	DMP††	NH‡‡	DMP††	NH‡‡	DMP††	NH‡‡	DMP††	NH‡‡	
Medical Clinic	7.26	29.04	4.99	29.94	3.21	32.1	2.47	24.7	2.60	46.8	162.58
Surgical Clinic	8.33	33.32	4.30	25.8	0.91	9.1	0.36	3.6	0.04	0.72	72.54
Pediatric Clinic	1.48	5.92	6.55	39.3	4.38	43.8	0.26	2.6	0.02	0.36	91.98

††DMP: Daily Mean of Patients; ‡‡NH: Nursing Hours; *MC: Minimal Care; †IC: Intermediate Care; ‡HDC: High Dependence Care; |§SIC: Semi-Intensive Care; ||InC: Intensive Care; **TNH: Total Nursing Hours.

Finally, Chart 1 shows the comparison between the real (available) staff and the sized staff of the three units, as well as the general staff, in addition to illustrating the deficit/surplus of Nursing staff by professional category.

Chart 1 – Comparison between the real and sized Nursing staff in the Clinical, Surgical and Pediatric hospitalization units. Midwest Region, Brazil, 2019.

Sizing of the Nursing Staff	Real Staff			Sized Staff			Deficit/Surplus		
Hospitalization unit	NUR†	NT/NA‡	Total	NUR†	NT/NA‡	TOTAL	NUR†	NT/NA‡	Total
Medical Clinic	7	33	40	19	17	36	-12	+16	+4
Surgical Clinic	7	21	28	6	10	16	+1	+11	+12
Pediatric Clinic	6	23	29	8	13	21	-2	+10	+8
General	20	77	97	33	40	73	-13	+37	+24

†NUR: Nurse; ‡NT: Nursing Technician; ‡NA: Nursing Assistant.

DISCUSSION

In all the units studied, it was evidenced that, in some months of analysis, occupancy rates above 100% were observed. This is a visible reality in the Brazilian public hospital service, which is usually overcrowded. However, it is reinforced that, in the surgical and pediatric units, the occupancy rates were lower than in clinical hospitalization, which denotes the epidemiological profile of chronic diseases and their acute evolutions, which lead to the need to seek care in higher complexity levels, even among older adults. This characteristic is more common in clinical hospitalization units[14], but can be observed in other sectors when these units are overcrowded.

Regarding the mean hospitalization time, it is observed that, in clinical hospitalization, the measure varied from 15,2 to 18 days; in the surgical one, from 3.6 to 8.9 days; and, in the pediatric unit, from 7.1 to 11.4 days. This is in line with the health indicators of a study carried out in three teaching hospitals in southeastern Nigeria, which obtained a bed turnover interval similar to those found in the units surveyed[15]. As for the extra hospitalization time and health-related infections (*Acinetobacter baumannii*, *Klebsiella pneumoniae*, *Staphylococcus aureus)*, a study conducted in a University Hospital in Central China showed that patients with this condition remained hospitalized for an extra time of 5.4 days, when compared to other groups that did not develop any infections[16]. This fact reinforces that the institutions must work on reducing this metric, both in order to avoid infections and other adverse events, as well as to increase bed turnover[1], which is a productivity indicator of interest to organizational sustainability.

A study carried out in the pediatric surgery hospitalization unit of a teaching hospital in the municipality of São Paulo, confirmed that most of the patients (54.8%) had a hospital stay between 1 and 6 days, and that 8.4% stayed hospitalized for more than 30 days[17]. This confirms that permanence is an essentially variable indicator, given the unique health specificities/needs among people, including children, and also due to aspects of hospital care organization.

Good hospital practices, such as early discharge planning, and even lean operating systems – or lean healthcare – have been the object of discussions and recommendations in order to improve organizational performance, which includes length of stay[1]. Assumptions of this kind require institutional investment and changes in the management models, which includes the provision of Nursing staff[5], focus of this study.

Especially in surgical hospitalization, the increase in the length of stay can be a result, for example, of surgical cancellation, which is a parameter for hospital quality/performance. Evidently, with its rise, it tends to increase the patients' length of stay in the hospital, which is unfavorable both for the institution and for the patient[18]. Despite this situation, the surgical hospitalization unit had a mean length of stay of more than seven days "only" in a single month, which was also the one with the highest occupancy rate in the sector.

On the other hand, the month of July, with the lowest occupancy rate in the surgical hospitalization sector (64.9%), may have influenced the results of the sizing of the Nursing staff of the unit, which was a product especially of the application of the PCS to the patients hospitalized in the units. In this sense, it is suggested, in advance, that interpreting staff sizing together with hospital occupancy and permanence indicators is positive, as it increases the critical interpretive capacity of the findings, which is a contribution of this study.

PCS – both for adults and for the pediatric clientele − is intended to classify the patients in line with the degree of complexity/dependence on Nursing care; however, each instrument has adaptations to meet the needs inherent to the specificities of each "type" of patient[3,12,19]. It is therefore a way of measuring the Nursing workload by the complexity level required by the clientele, but also a care management instrument[2–3].

The classification of the patients in clinical and surgical hospitalization showed predominance of minimal care throughout the time frame. Such findings are related to the results of a study carried out in a philanthropic institution in Minas Gerais, which evidenced the predominance in the classification of this care category: 67.99% in clinical and 80.65% in surgical hospitalizations[19]. These data demonstrate that, despite epidemiological differences that characterize the patients in the units under study, there are high proportions of low complexity care, which is "positive", as they are not units for critical care, such as the ICUs.

It is alluded that attributing higher volumes of low complexity/dependence on care is a clearly more plausible finding to the reality of surgical hospitalization, in which the proportion of more complex patients is lower than in clinical hospitalization, which presented the highest percentages of demand for semi-intensive and intensive care. This is also in agreement with the aforementioned Minas Gerais study, where no surgical patients were classified as dependent on intensive care, nor was the proportion of semi-intensive care (1.17%)[19] lower than most of those verified in the study herein described. In addition, the allocation of critically-ill patients to clinical hospitalization may correspond to the insufficiency of ICU beds, already pointed out as a social problem in public health[20].

As for the classification of the pediatric hospitalization unit, there was prevalence of IC and HDC (59.3%; 39.4%) in the study time frame. This finding corroborates a study conducted in the state of Rio de Janeiro, in a pediatric ward of a public hospital, which also showed prevalence of IC (49%) and HDC demand (33%)[21]. It is noteworthy that the lower proportion of minimal care in the pediatric sector is expected because, according to the Resolution in force – which deals with the sizing of the Nursing staff, rooming-in (mother-child binomial), nursery and pediatric hospitalization unit – all newborns and children under 6 years of age should be classified, at least, as IC, regardless of the presence of a companion[4], a fact that directs the lower proportion of MC in these environments.

In São Paulo, a study conducted in 2017 in a 25-bed pediatric unit (larger than the sector surveyed in this study) found a patient profile that required 20.5 h/Nursing/day for IC patients[17]. In this research, the need for 39.3 daily hours for the demand of this same care category was verified, which denotes higher workload of the Pediatric Nursing team in the survey hospital, a factor that is related to the deficit of nurses found by the staff sizing process.

This study showed that clinical hospitalization stood out for the greater number of hours required from Nursing (162.58), which is perhaps expected even by the larger number of beds, in addition to occupation. However, these hours were demanded in larger numbers for intensive care (46.8), showing a deficit in workload rationalization, as it evidences complex-care patients hospitalized in a non-critical care unit, whose adequate assistance is intensive care, with appropriate support for such[4]. Despite this reality, it is worth mentioning that, perhaps, the ICU admission criteria – of a medical-centered domain – do not necessarily correspond to the reality of the Nursing care demands assessed by the PCS, which leads to divergences and work overload for the Nursing team working in non-critical sectors.

With regard to the nurse category, the research showed that the real staff represents a deficit of 12 professionals in the number of workers in clinical hospitalization, a slight surplus of 1 worker in surgery, and a deficit of 2 nurses in the pediatric unit. This situation can reflect especially on the management and provision of complex care during clinical hospitalization. This type of hospitalization has a clientele profile that is highly dependent on care, differentiating itself from the surgical and pediatric units, due to the comorbidity and chronicity of the cases, requiring more hours from the nurse[7], in addition to physical and structural resources.

The problem is intensified when noticing that, in adult hospitalization units (clinical and surgical), the distribution/allocation of available/real nurses was exactly the same: seven workers. In other words, even with higher number of beds, occupancy rate, mean stay and complexity of clinical Nursing care, there was a barrier to establishing a quantitative allocation of the Nursing staff within rationality. Such reality can negatively interfere with quality and patient safety results[5], as well as it hurts the essence of the sizing of human resources for Nursing[4,22]. Regarding this, it is highlighted that a study carried out in 243 hospitals in 6 countries – Belgium, England, Finland, Ireland, Spain and Switzerland – showed that the 10% reduction in the proportion of professional nurses is associated with a 12% increase in the probability of the patients dying[23].

Although the results evidenced suggest a weakness in the managerial rationality for the allocation of Nursing staff, this finding stands out as a contribution of the study, as it shows that the aforementioned information is valuable for the decision-making of the leaders. In other words, at least one nurse from the surgical unit could be reallocated to clinical hospitalization, since the deficit in this sector was much greater (-12) than in pediatric hospitalization (-2). In addition to that, they are both adult care segments, which perhaps would cause fewer conflicts in this decision (reallocation), which, in addition to relational management of reallocated professionals, derives in the matching of specific skills to the work demands.

A study that investigated the internal turnover of Nursing workers at a university hospital in Paraná, as a strategy for conflict management, signaled that, although there was a positive aspect to what was proposed, internal turnover also raised feelings of anxiety, fear, frustration, sadness, anguish and insecurity among the reallocated workers[24]. Therefore, linking the literature to the results of this study, it is inferred that the staff reallocation is an activity that requires social skills among Nursing managers. However, it is believed that the demonstration and participation of the team in the sizing process is an aspect that facilitates possible coping.

The pediatric unit showed a surplus of 10 (43.4%) nursing technicians and assistants, thus reinforcing the need for better allocation of the workforce of Nursing professionals, considering that adequate number and higher level of educational instruction of the professional are premises for the conduction of safe care[21,25]. It is to be noted that care in Pediatric Nursing carries with it the aspects that may not be accurately assessed by the PCS, as it involves subjective and intensified issues of humanization of care, which go beyond the usual demands – such as education in health and recurrent contact with family members/caregivers – either in preparation for discharge or even during hospitalization[26].

Another issue recently researched in the perspective of Nursing workload, which extrapolates the PCS evaluative items, is the admission of patients to hospitalization units, being considered an activity responsible for 16.3% to 31.5% of the workday among hospital Nursing teams. Therefore, it is ad aspect that possibly needs to be considered when forecasting and allocating personnel[25]. In this sense, the allusions grounded on the literature and the findings of this study reinforce that the verified personnel surplus should be considered with caution by the managers. It is very probable and plausible that there are several nuances of the Nursing workload that are not extracted by the systematic application of the PCS, which was the core of this study in defining the quantitative and qualitative human capital.

Regarding the category of nursing technicians/assistants, in general, sizing indicated a significant surplus of workers (+37). In clinical hospitalization, the number of these professionals was exceeded in 51.5%; in the surgical unit, in 52.3%; and, in the pediatric unit, as already mentioned, in 43.4%, values that are in disagreement with the guidelines in force[4]. Nevertheless, renowned authors who deal with the subject matter recommend that, based on the quantitative and qualitative results of staff sizing, it is up to the nurses who experience the work dynamics on a daily basis to decide whether the method applied corresponds to the needs required for the provision of Nursing care[3,13,20].

The surplus of mid-level professionals is not a premise for separating workers, but rather that there is common allocation of less skilled personnel to meet complex demands inherent to Nursing care. An alternative to this would be to verify the sizing of other care units, whether or not they are hospitalization units. To this end, the study contributes to showing the importance of the systemic view on sizing of the Nursing staff.

The international literature indicates that the appropriate provision of Nursing professionals offers subsidies for the provision of safer care, with lower incidence of care-related harms, shorter hospitalization time, and greater optimization of resources[27]. This study is expected to corroborate with premises such as this, in particular, for an expanded provision of nurses in units assisting patients who are highly dependent and/or in need of high care complexity.

It is believed that the most significant limitation of this study is its failure to compile the absence and presence of workers, which encourage a possible redefinition of the TSI used. However, its results can be considered by nurses and Nursing managers to seek improvements in care quality and safety through the appropriate distribution of the Nursing workforce. Another contribution of the research is the evidence/reinforcement that staff sizing must be assessed in the most systemic way possible in the organizations. In other words, although its assessment is limited to some variables, complementing it with other measures seems to provide a more complete view of it.

CONCLUSION

It is concluded that there was inadequacy of Nursing staff in the hospitalization units of the university hospital surveyed, as predicted by the sizing process, as there was a difference in workload and similarity in the allocation of professionals across the units. This reality was verified by the larger proportion of sectors with nurse deficits – with emphasis on clinical hospitalization – in addition to the fact that all the units presented surplus of mid-level professionals. Furthermore, even with the clear difference between the demand for Nursing hours – that is, workload, number and occupancy of beds in the sectors, in addition to the complexity of divergent care – the allocation of higher-level personnel was similar, which is a possible sign that this managerial activity occurred in an eminently empirical/routine fashion in the surveyed units.

Although a general surplus of workers has been verified, it is prudent for this result to be judged with caution by managers and decision-makers, mainly for the following reasons: some nuances of the Nursing workload tend to extrapolate the classification of patients – such as psychological demand, for example – even due to other work activities not extracted by the PCS; and also because minimal TSI has been used. Therefore, this study is considered to be advancing in the direction of clearly reinforcing that the sizing of Nursing staff is a systemic managerial activity, and should not be restricted to assessing the degree of dependence on Nursing care, even if this variable is central to the definition of the staff size.

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NOTES

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APPROVAL OF ETHICS COMMITTEE IN RESEARCH

Approved by the Ethics Committee in Research of the Julio Müller University Hospital, Cuiabá, Mato Grosso, opinion No.3,181,185/2019 and Certificate of Presentation for Ethical Appreciation No. 07626019.5.0000.5541.

CONFLICT OF INTEREST

There is no conflict of interest.

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