DIMENSIONING OF NURSING IN A HOSPITAL DEPARTMENT OF DETOXIFICATION FOR DRUG ABUSE

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ABSTRACT

Staff dimensioning bases the quantitative and qualitative prediction of human nursing resources that is required for the provision of care. The study aimed to size the nursing team of a hospital department of detoxification for drug abuse and to compare the scale of the service. It is a descriptive, transversal and quantitative research. It was developed through the measurement of the dependency of the nursing care provided, applying specific instrument for the psychiatric clientele containing 11 evaluation indicators. After classification of dependence of the patients, the nursing hours were measured in two molds, and the staff dimensioning. Data analysis was based on Resolution No. 543/2017 of the Federal Nursing Council. During the study period, the detoxification department operated with maximum occupancy. Thus, 12 patients were evaluated daily, totaling 120 classifications of patients. Nursing hours totaled 74.6 and 107.6 hours, which resulted in two staff dimensioning (n=17 and n=24), which were compared to the actual (n=17). It was concluded that the present reality of the department does not correspond to the need of nurses of the sector, therefore, it is undersized.

Keywords: Personnel downsizing. Workload. Psychiatric nursing. Substance-related disorders. Illegal drugs

INTRODUCTION

Inherited from historical movements whose biomedical model is in the eyes of drug addicts, the treatment of drug abuse and dependence has been a paradigm to be broken in the context of medicalization and the biological anachronistic view of this problem(1-2).

Drug abuse is a public health problem because of its association with numerous social and emotional problems. Thus, harm reduction can be a therapeutic logic that should guide the work of mental health services aimed at users and their systemic needs(3-4).

Studies emphasize a concern with the repressive apparatus, as well as with the control of illegal drug use and trade(5-6). Despite mentioning the harm reduction issue, they make clear the emphasis on actions related to the use of alcohol and other drugs, notably the "incessant pursuit of the ideal of building a society protected from the use of illicit drugs and misuse of licit drugs"(3-4).

Regardless of the political approach followed by municipalities and/or states, it is necessary to have health actions focused on prevention and health promotion as in the process of multi-dimensional rehabilitation of users, involving the family context through the use of the health care network created in Brazil after the creation of Law 10.216/2001 of the Psychiatric Reform(6).

Faced with the exhaustion of all possibilities of extra-hospital resources, hospitalization for detoxification is an option for treatment against drug abuse(7-8). Article 6 of Law 10.216 warns that the intervention can occur in three different ways: I - voluntary hospitalization: it occurs with the consent of the user; II - involuntary hospitalization: it occurs without the consent of the user and at the request of a third party; and III - compulsory hospitalization: it is determined by justice(8).

In the contract for the treatment of chemical dependence, whether in the hospital or outside, the nursing team has unique importance. This is because, besides representing the professional category of greater contact with therapeutic interventions of a "clinical" order, such as administering medication, promoting physical comfort, among others, it is, or should also be postulated as a promoter of innovative strategies that seek to transgress vertically and purely biological care, such as, for example, playfulness(9); intermediation with a focus on social reintegration; besides the frank and full
therapeutic communication with the service user, seeking to establish the conditions of care compatible with their systemic needs\(^2\).

In the context of the nurse, in addition to direct care, it is inherent in the profession that it deploys skills, knowledge and competencies to make decisions that converge to the management of the nursing team and the care, including the assistance produced in mental health services, in any level of complexity\(^9\)-\(^10\). For this reason, especially in the hospital environment, where work tends to be fragmented, it is imperative that the nurse uses the means and management tools that can facilitate the rational decision-making process and culminate in the most qualified and safe care, which is undoubtedly a challenge and a necessity for hospital detoxification/rehabilitation services to drug abuse/addiction.

The range of management tools appropriate to or adapted to the needs of nursing is vast, and they do not infrequently attach themselves to the dynamics of the organization of human work, once it is evident that this factor is elementary to the profession. In the midst of the arsenal of human resources nursing management tools, there is the dimensioning, a method that bases the quantitative and qualitative prediction of personnel necessary to provide the assistance of a particular clientele, being its exclusive employment to the nurse\(^12\).

Despite the finding of a validated instrument in Brazil that makes it possible to measure the nursing workload through the classification of patients related to mental health/psychiatry\(^13\), understood here as transversal to substance use detoxification services, production scientific study on personnel dimensioning in this context is essentially incipient, since studies tend to use hospital units linked to medical-surgical care as research fields, according to literature review\(^14\).

A study that aimed to characterize the clientele served in a hospital psychiatric service recommends that research on the design of nursing staff in these spaces be performed\(^15\), which parallels the need to investigate in the context of detoxification.

Considering the paucity of studies that involve the dimensioning of personnel in the context of mental health, and, consequently, in services of detoxification to the use of alcohol and other drugs; that the dimensioning of nursing personnel is a factor that can leverage patient safety in any segment of health care; and that research on this issue can contribute to a better understanding of the nurse in the managerial context of the services in question, it is postulated that investigating whether the issue is socially and scientifically relevant.

In view of the above, it was questioned: Is the dimensioning of nursing staff in a drug abuse/dependence detoxification department adequate quantitatively? In order to address this question, the study aimed to size the nursing team of a hospital detoxification department for drug abuse and to compare the framework dimensioned to the real needs of the service.

**METHODS**

This is a descriptive, cross-sectional, quantitative study. It was developed at the Detoxification department for the abuse of alcohol and other drugs from a public university hospital in the interior of Paraná, Brazil. The hospital organization meets exclusively the demand of the Unified Health System with operational capacity of 210 active beds. In turn, the unit has 12 beds for the treatment of detoxification on the agenda.

The sector surveyed serves mainly children and adolescents, from the age of nine. The hospitalization takes place collectively, and the detoxification treatment has the same duration between hospitalization and discharge of all patients, in each cycle, which lasts around 21 days. The hospitalizations are voluntary, involuntary (family indication), and, mainly, by judicial order, that is, compulsory, due to the social demand and the reference that the service represents.

The nursing team of the detox unit has a weekly work schedule of 36 hours. The scale of work is organized in the morning, afternoon and three night periods. The department has nursing management represented by a nurse who completes a 40-hour workweek.

The data collection happened in December 2016, for 10 consecutive days of classification of patients hospitalized in the period, considered sufficient once previously known that the unit does not have seasonality in care\(^12\). The classification of the patients was carried out by the nurses of the detoxification unit.

The Validated Psychiatric Nursing Dependency Level Instrument\(^13\) was used. Although the instrument points to the psychiatric specialty, there is a recommendation for its use in areas of nursing affinity whose therapeutic relationship is differentiated from those of a purely clinical-interventionist order that is linked to the psychosocial dynamics and possible changes in the patient's behavior\(^12\)-\(^13\), considered, therefore, relevant for application with the users of the detoxification service.

It is noteworthy that at the time of the study the System of Classification of Patients in Alcohol and
Other Drugs has not available and published yet(16). Thus, the instrument of Classification of the Level of Psychiatric Nursing Dependency was used(19).

The instrument of classification of patients applied has 11 indicators of evaluation, which are: care with the appearance and hygiene; expression of thought; humor and affection; activities; social interaction; feeding/hydration; sleep; medication; eliminations; vital signs and other controls; and complaints and somatic problems(13). Each indicator has a step gradation of three levels of patient dependence on nursing care, which represent points (1, 2 and 3). At the end of the evaluation of the patient by the nurse, the score of each patient in the sum of the points of all the indicators varies from 11 to 33 points, which synthesizes the classification of the same in the following possibilities: discrete, intermediate or full dependence(13).

After the daily evaluation of the patients, the mean of classifications of each level of dependence was calculated according to the total days (n=10) of observation. Based on the classification of the patients, the nursing team's workload was measured based on Resolution No. 543/2017 of the Federal Nursing Council, which updates and establishes parameters for the dimensioning of the professional nursing staff in the services in which nursing activities are performed(12).

In care units that use Patient Classification Systems, such as the employee in the service researched, the resolution determines the following parameters for nursing workload in 24 hours: 4 hours of nursing per patient in the minimum care; 6 hours of nursing per patient in the intermediate care; 10 hours of nursing per patient in the high-dependency and semi-intensive care; and 18 hours of nursing per patient in intensive care(12).

As the classification of the instrument used differs from the dependency categories of the Resolution, the adaptation of the classification of the patients by the instrument used(13) - which is also recommended by the Resolution of the Federal Nursing Council(12) - to the measurement of nursing hours (workload) occurred in two ways, called mold A and mold B, in order to give greater solidity in the personnel dimensioning. In model A, nursing care hours of minimal care were considered for patients classified as discrete dependence by the instrument; hours of intermediate care nursing to patients classified as intermediate dependence; and hours of high dependency nursing care, to patients classified as full dependence.

In mold B, the hours of intermediate care nursing were used, to the patients classified as discrete dependence; hours of high dependency care nursing, to patients classified as intermediate dependency; and hours of semi-intensive care nursing, to patients classified as full dependence by the classification instrument. It was decided not to include hours of intensive care adapted to the level of full dependency of the classification instrument, since this category of patients should be hospitalized in Intensive Care Units(12), it is not the case of the unit investigated.

To analyze the data collected from the patients' classification and to measure the nursing hours of the two molds, the equation recommended by the current guideline based on the study(12) was used, which is:

\[ \text{THE} = [(\text{PCM} \times 4) + (\text{PCI} \times 6) + (\text{PCAD} \times 10) + (\text{PCSI} \times 10)] \]

The notation “THE” represents the total number of nursing hours. The other notations represent the averages of patients classified in the period of each category, multiplied by the nursing hours required by each degree of care dependency. After this, the staff sizing method was also used in harmony with current recommendations(12), and using the two results of THE separately, as follows:

\[ \text{QP}_{\text{AOSP}} = \text{THE} \times \text{KM}_{\text{CD}} \]

The notation "QP" is equivalent to the nursing staff scaled in an inpatient unit (IU) based on a Patient Classification System. The total number of nursing hours calculated in the two estimation models was multiplied by the Constant of Marinho (KM), which, in hospitalization units, is a previously calculated coefficient based on the weekly nursing workday, in the days of and in the Technical Security Index (TSI), which is a percentage of the increase in the number of staff in order to fill the expected and unplanned absences among nursing workers(12).

In this study, the minimum recommended Technical Safety Index was used, which is equivalent to 15\(\%\)(12). As the nursing workday in the unit size is 36 hours, and the service runs uninterrupted in the week, the Marine Constant used was 0.02236(12). Also in the data analysis, the demographic characterization variables of the patients were treated by descriptive statistics.

The proportional determination of nursing professionals of higher and intermediate level (qualitative dimensioning phase) also respected the current recommendations of the Federal Nursing Council, which determines that the category of nursing care dependency with higher workload demand (hours) will be the determinant to define the percentage relation between nurses and nursing technicians in the staff dimensioned(12). The proportions of nurses (others, mid-level professionals) on the framework are as follows: 33% of nurses in minimum and intermediate care; 36% in high-dependency care; 42% in semi-intensive care;
and 52% in intensive care, the only category that does not allow nursing assistants, only technicians\(^{(12)}\).

In order to know the actual number of active workers in the detoxification unit during the study period, the nursing management sheets filled out by the nursing management of the sector and sent to the Nursing Directorate of the hospital were used, as well as the work scale of the month of reference.

All the requirements that govern the researches with human beings arranged by Resolution 466/2012 of the National Health Council were respected. In addition, the project that fostered this research was appraised and approved by the Research Ethics Committee with Human Beings of the State University of the West of Paraná, under protocol nº 1,696,925 / 2016 and Certificate of Presentation for Ethical Appreciation 58636916500000107.

### RESULTS

In the period of analysis, the detoxification department operated with 100% of occupancy. So 12 went daily, totaling 120 ratings. Nine (75%) are men, and three (25%) women. The mean age of the patients was 14.6 years-old, with a minimum of 13 and a maximum of 17 years-old. The most common age (n = 4) was 13 years-old. All patients were hospitalized for detoxification due to crack dependence associated with other substances. The hospitalizations were involuntary and/or compulsory.

Table 1 summarizes the results of the studies, average classifications during the period, and the demand for nursing hours, considering the two calculation models used.

<table>
<thead>
<tr>
<th>Level of dependence</th>
<th>Classification</th>
<th>Mean</th>
<th>Nursing hours(^{I})</th>
<th>Nursing hours(^{II})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>31</td>
<td>3.1</td>
<td>12.4</td>
<td>18.6</td>
</tr>
<tr>
<td>Intermediate</td>
<td>67</td>
<td>6.7</td>
<td>40.2</td>
<td>67</td>
</tr>
<tr>
<td>High</td>
<td>22</td>
<td>2.2</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>12</td>
<td>74.6</td>
<td>107.6</td>
</tr>
</tbody>
</table>

\(^{a}\) considered the hours for categories of the minimum, intermediate and high dependency care of the Resolution Federal Nursing Council nº 543/2017. \(^{B}\) considered the hours for the categories of intermediate, high-dependency and semi-intensive care of the Federal Nursing Council Resolution No. 543/2017.

The level of care dependence with the highest demand for hours was the intermediate. However, since two parameters were applied in the calculation of nursing hours, the definition of the proportion of nurses and mid-level professionals was also different, that is, in the calculation with the larger nursing hours (mold B), the proportion of nurses respected the percentage attributed to high dependency care and in the first (mold A), intermediate care. In this respect, Table 2 presents the comparison between the dimensioned frames and the real one of the unit.

<table>
<thead>
<tr>
<th>Establishment plan</th>
<th>Nurses</th>
<th>Nursing Technicians and/or Assistants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real</td>
<td>2</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Dimension(^{I})</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Dimension(^{II})</td>
<td>9</td>
<td>15</td>
<td>24</td>
</tr>
</tbody>
</table>

\(^{a}\) Calculated based on the nursing hours for the categories of the minimum, intermediate and high dependency care of the Resolution Federal Nursing Council nº 543/2017.\(^{b}\) Calculated based on the nursing hours for the categories of intermediate, high-dependency and semi-intensive care of the Resolution Federal Nursing Council nº 543/2017.

### DISCUSSION

The mean age of the patients was 14.6 years-old and the most common age was 13, which is in line with another study\(^{(18)}\) that showed that the profile of crack users occurs in the age group between 15 and 25 years old, they are predominantly male and users of other psychoactive substances.

In contrast to the above, another study that analyzed 350 medical records of patients hospitalized for chemical dependency in a hospital in the metropolitan region of Curitiba-PR indicated that 60%
The deficiency of the number of nurses was more evident in the estimation of the dimensioned II table, which used the parameters of the "more severe" clientele, considering the categories of intermediate; high dependence and semi-intensive care. Although this dimensioned staff has demonstrated a worse reality of the detoxification unit, perhaps this is the most reliable to its relation with the demand of work load of the sector. According to the directive of the Federal Nursing Council nº 543/2017 it is recommended that 10 hours/day of nursing for each patient in psychiatric wards when a Patient Classification System is not used\textsuperscript{12}, a value that exceeds the minimum (mainly) and intermediate care nursing hours. Therefore, it was considered prudent to use the calculation of the size of this particular clientele excluding the category and the respective parameter of minimum care nursing hours.

It is believed that in addition to the arsenal of skills, attitudes and competencies, at the core of the nursing team, it is essential the adequacy of the staff composition, since the insufficiency of human resources can also contribute to the occurrence of adverse events during the period of hospitalization\textsuperscript{20}.

The under-sizing of nurses is a frequently fact in Brazil, ratified by a literature review study that has repeatedly pointed out the problem in surveys throughout the national territory\textsuperscript{14}. It is necessary to reflect on this reality in the detoxification department due to abusive drug addiction, since the therapeutic actions that result in nursing work can often require skills and competences that go beyond technical know-how, such as play, education and even social reinsertion.

There is no way to affirm, at least with the results of this study, whether the adequacy of the proportion of nurses on the medium level category in the sector, the quality of care would be better or more effective in the detoxification service. That said, the prospect for future research is clear.

CONCLUSION

It was concluded that the nursing staff of the department of detoxification for drug abuse/dependence is insufficient to the estimated demand for the human resources dimension, especially in the category of nurses. Even with the use of lower parameters of care hours per patient/day, the staff available in the sector is qualitatively misfit. Moreover, in the estimation based on higher parameters, the staff as a whole was even more undersized.

Among the limitations of this study is the short period of data collection, in a single unit of only one hospital. However, it is believed that research contributes to the management of psychiatric nursing services, especially because studies on the subject of research in this area may be scarce in Brazil.

DIMENSIONAMENTO DE ENFERMAGEM EM UNIDADE HOSPITALAR DE DESINTOXICAÇÃO POR ABUSO DE DROGAS

RESUMO

O dimensionamento de pessoal fundamenta a previsão quantitativa e qualitativa de recursos humanos de enfermagem necessários para a prestação da assistência. O estudo objetivou dimensionar a equipe de enfermagem de uma unidade hospitalar de desintoxicação por abuso de drogas e comparar o quadro dimensionado ao real do serviço. Trata-se de uma pesquisa descritiva, transversal e quantitativa. Foi desenvolvida através da mensuração da dependência dos cuidados de enfermagem prestados, aplicando-se instrumento próprio à clientela psiquiátrica contendo 11 indicadores de avaliação. Após classificação de dependência dos pacientes, procedeu-se a mensuração das horas de enfermagem, em dois moldes, e o dimensionamento de pessoal. A análise dos dados aconteceu com base na Resolução nº 543/2017 do Conselho Federal de Enfermagem. No período de estudo, a unidade de desintoxicação atuava com ocupação máxima. Sendo assim, 12 pacientes foram avaliados diariamente, totalizando 120 classificações de pacientes. As horas de enfermagem totalizaram
74,6 e 107,6 horas, o que resultou em dois quadros de pessoal dimensionados (n=17 e n=24), que foram comparados ao real (n=17). Concluiu-se que o quadro real da unidade não corresponde à necessidade de enfermeiros do setor, portanto, é subdimensionado.


**DIMENSIONAMIENTO DE ENFERMERÍA EN UNIDAD HOSPITALARIA DE DESINTOXICACIÓN POR ABUSO DE DROGAS**

**RESUMEN**

El dimensionamiento de personal fundamental la previsión cuantitativa y cualitativa de recursos humanos de enfermería necesarios para la prestación de la atención. El estudio tuvo el objetivo de dimensionar al equipo de enfermería de una unidad hospitalaria de desintoxicación por abuso de drogas y comparar el cuadro dimensionado al real del servicio. Se trata de una investigación descriptiva, transversal y cuantitativa. Fue desarrollada a través de la medición de la dependencia de los cuidados de enfermería prestados, aplicándose instrumento propio a la clientela psiquiátrica conteniendo 11 indicadores de evaluación. Tras la clasificación de dependencia de los pacientes, se llevó a cabo la medición de la horas de enfermería, en dos modelos, y el dimensionamiento de personal. El análisis de los datos fue realizado con base en la Resolución nº 543/2017 del Consejo Federal de Enfermería. En el periodo de estudio, la unidad de desintoxicación actuaba con ocupación máxima. Así siendo, 12 pacientes fueron evaluados diariamente, totalizando 120 clasificaciones de pacientes. Las horas de enfermería totalizaron 74,6 y 107,6 horas, lo que resultó en dos cuadros de personal dimensionados (n=17 e n=24), que fueron comparados al real (n=17). Se concluyó que el cuadro real de la unidad no corresponde a la necesidad de enfermeros del sector, por lo tanto, es demasiado pequeño.

**Palabras clave:** Downsizing organizacional. Carga de trabajo. Enfermería psiquiátrica. Tratamientos relacionados al uso de sustancias. Drogas ilícitas.

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