Human resources costs in hemodialysis: analysis of the warning and overtime regimen

Custos com recursos humanos em hemodiálise: análise do regime de sobre aviso e horas extras

Costos de recursos humanos en hemodiálisis: análisis del régimen de advertencia y horas extras

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RESUMO

Objetivo: avaliar o custo e a viabilidade financeira do regime de sobreaviso e horas extras dos profissionais de enfermagem do setor de Hemodiálise e propor intervenções que favoreçam a racionalização dos recursos financeiros nesta unidade. **Método:** levantamento da literatura pertinente em bases de dados acadêmicas; identificação da realidade através de análise de documentos como folha de ponto, escala de sobre aviso, descrição de horas extras, comprovantes de pagamento de táxi e reembolso quilometragem; e construção do Diagrama de Ishikawa para evidenciar o problema e suas causas. **Resultados:** o custo com o regime de sobre aviso e horas extras no setor de hemodiálise em um período de 18 meses foi de R$ 198.996,59 (média mensal R$ 11.005,39), verificou-se que 70% deste valor deve-se ao pagamento de sobre aviso. Foi proposto duas intervenções distintas, as quais economizaram em 18 meses aproximadamente R$ 73.730,99 (média mensal RS 4.096,16) e 82.814,40 (média mensal R$ 4.600,80), tais propostas aguardam avaliação dos gestores responsáveis para possível implantação. **Conclusão:** a construção deste estudo contribuiu de maneira a aprimorar e desenvolver o conhecimento teórico-prático sobre a gestão financeira e otimização de recursos, podendo servir também como incentivo/modelo para outras unidades iniciarem ações visando a racionalização de recursos financeiros.
Descritores: Custos; Recursos Humanos; Hemodiálise; Horas Extras; Sobreaviso.

ABSTRACT

Objective: to evaluate the cost and financial viability of the overwarning and overtime regime of nursing professionals in the Hemodialysis sector and to propose interventions that favor the rationalization of financial resources in this unit. **Method:** survey of the pertinent literature in academic databases; identification of reality through analysis of documents such as timesheet, scale over notice, description of overtime, vouchers of payment of taxi and mileage refund; and construction of the Ishikawa Diagram to highlight the problem and its causes. **Results:** the cost with the warning and overtime regime in the hemodialysis sector in an 18-month period was R$ 198,996.59 (monthly average R$ 11,005.39), it was found that 70% of this amount is due to the payment of on notice. Two distinct interventions were proposed, which saved approximately R$ 73,730.99 (monthly average RS 4,096.16) and 82,814.40 (monthly average R$ 4,600.80) in 18 months, such proposals await evaluation from managers responsible for possible implementation. **Conclusion**: the construction of this study contributed in order to improve and develop theoretical and practical knowledge about financial management and resource optimization, and may also serve as an incentive/model for other units to initiate actions aimed at rationalizing financial resources.
Descriptors: Costs; Human Resources; Hemodialysis; Overtime; On notice.

RESUMEN

Objetivo: evaluar el coste y la viabilidad financiera del régimen de sobrecalentamiento y horas extras de los profesionales de enfermería del sector de la Hemodiálisis y proponer intervenciones que favorezcan la racionalización de los recursos financieros en esta unidad. **Método:** encuesta de la literatura pertinente en bases de datos académicas; identificación de la realidad a través del análisis de documentos tales como hoja de horas, escala sobre aviso, descripción de horas extras, vales de pago de taxi y reembolso de kilometraje; y la construcción del Diagrama de Ishikawa para resaltar el problema y sus causas. **Resultados:** el costo con el régimen de advertencia y horas extras en el sector de la hemodiálisis en un período de 18 meses fue de R$ 198,996.59 (promedio mensual R$ 11,005.39), se encontró que el 70% de esta cantidad se debe al pago de previo aviso. Se propusieron dos intervenciones distintas, que ahorraron aproximadamente R$ 73,730.99 (promedio mensual RS 4,096.16) y 82,814.40 (promedio mensual R$ 4,600.80) en 18 meses, tales propuestas esperan la evaluación de los gerentes responsables de una posible implementación. **Conclusión:** la construcción de este estudio contribuyó con el fin de mejorar y desarrollar conocimientos teóricos y prácticos sobre gestión financiera y optimización de recursos, y también puede servir como incentivo/modelo para que otras unidades inicien acciones destinadas a racionalizar los recursos financieros.
Descriptores: Costos; Recursos Humanos; Hemodiálisis; Horas extras; De aviso..

REVIEW

Introduction

In the last century, much of the world has experienced an intense epidemiological transition in the field of health, a fact that can be seen from the constant changes in the patterns of mortality, morbidity and disability of the population. In this context, Chronic Kidney Disease (CKD) is inserted, considered a worldwide public health problem.1 Such condition consists of kidney damage, with progressive and irreversible loss of kidney function (glomerular, tubular and endocrine).[2]

It is estimated that the worldwide prevalence of CKD is 8 to 16%.[3] Brazilian data do not allow the assessment of the prevalence of CKD as a whole, however a study points out that in 1994 there were about 24 thousand individuals undergoing some type of treatment for CKD, in 2004 this number increased to 60 thousand individuals, an increase of 150% in a decade; revealing the severity and scale of the problem.[4]

DRC is a silent condition, a fact that contributes to a late diagnosis. In the more advanced stages to ensure the individual's survival, it may be necessary to use the Renal Replacement Therapy (RRT) modality; hemodialysis being the main dialysis modality currently used.[5]

The current legislation in Brazil requires that the members of the health team remain in the dialysis environment throughout the hemodialysis session; being included in this aspect the nursing professionals.[6-7]

During the hemodialysis process, it is the role of the nurse and nursing technician to identify possible complications, assess the proper functioning of the dialyzer, provide a peaceful and comfortable environment, offer emotional support and enable / encourage the exposure of feelings. The monitoring of the hemodialysis session can be analyzed as a care intervention, aimed not only at patient safety, but also at the quality of care provided.[8]

The need for constant monitoring of this patient may require management measures from the health institution regarding the working hours of the nursing team, such as variable working periods, flexible schedules, implementation of the over warning regime and overtime, these measures will vary according to the demand of the hemodialysis service. With regard to overtime, for example, the cost x benefit of this practice must be evaluated, the literature points out the harm of overtime for the nursing team, with repercussions such as stress, decreased quality of care, increased absenteeism, decreased quality of life, among others.9 It is also necessary to assess the costs of such measures and their feasibility, still talking about overtime, a study conducted at a Public Hospital in Coacal (RO) evaluated absenteeism in the nursing team, composed of 352 employees, it was found that the institution's spending on overtime for this category in 2013 reached R$ 438,315.52.[10]

In the mid-1980, Strategic Management in Human Resources started to be placed on the agenda in large organizations, since it enables the maximization of profits, customer satisfaction and an increase in the quality of the services provided. The current characteristics of Strategic Management in Human Resources include: concentration on the core business of the area, process management, downsizing and downsizing, benchmarking and extraversion, consultancy and strategic vision, innovation and cultural change, emphasis on

objectives and results, effectiveness organizational and forward-looking vision.[11-12]

The intense competition in the organizational world, makes human resources cost management one of the topics widely discussed today. Issues related to the cost of human resources must be evaluated frequently, and it is necessary to consider the country's political and economic situation, market analysis, financial viability of the current human resources framework, etc.[13]

In the context of hospital care, the cost of human resources in nursing is responsible for the largest share of the total expenditure of health institutions.14 The costs spent with human resources in the hemodialysis sector are specifically little known. However, it is known that the increasing expenditures in the hospital area and the scarcity of financial resources, requires managers to take systematic actions that favor cost control and maintenance of the quality of services. Health institutions are increasingly under pressure to carry out management restructurings, with the objective of ensuring the organization's survival, for this, cost control is indispensable.[8,15-16]

Understanding that the evaluation of the costs of health services is a managerial strategy capable of subsidizing the allocation of financial resources, the guiding question of this research is: the regime of alertness and overtime of nursing professionals working in hemodialysis is financially viable?

In this sense, the objectives of the study were: to assess the cost and financial viability of the health care and overtime regime of nursing professionals in the Hemodialysis sector; and to propose interventions to rationalize financial resources in the Hemodialysis sector.

Method

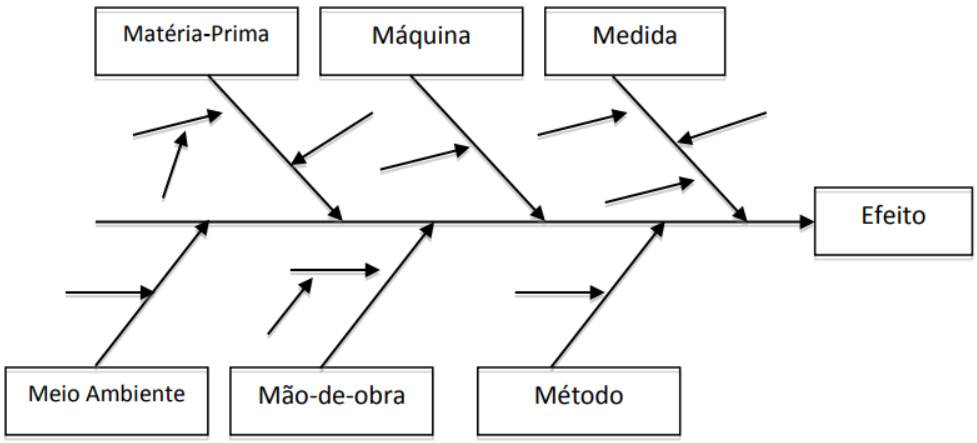
In view of the problems that require changes, it is necessary to recognize the issues involved. The relevant academic literature was surveyed; and data collection, based on the cost of this regime, such information was obtained through some documents of the institution, these being the time sheet, scale of warning, overtime description, proof of taxi payment and mileage reimbursement, in the period from 16/11/2015 to 15/05/2017.

Subsequently, in order to systematically assess the causes of the high cost of this regime, the Ishikawa Diagram was used, searching from there for possible points for intervention.

The Ishikawa Diagram is also known as the Cause-Effect Diagram or Fishbone Diagram, created by Karou Ishikawa in 1953, used in principle to assess the dispersion in the quality of products and processes in the industrial environment. This tool favors the identification and analysis of the possible causes of variation of a given process and the way the causes interact with each other.[17-18]

The construction of the diagram starts considering the effect, the words that appear at the ends of the diagram's branches are families of causes, which can be classified as raw materials, machines, measures, environment, labor and method (6Ms). Other families of causes can also be used at the ends of the branches, depending on the problem to be investigated.[19-20]

Figure 1 – Ishikawa Diagram



Source: Ishikawa K. Total quality control: in the Japanese way. Rio de Janeiro: Campus. 1993**.**

After the definition and implementation of the intervention, the team's forecast, forms of monitoring, evaluation and budget involved will be carried out. Regardless of the intervention to be put into practice, the monitoring will be carried out based on the monitoring of the number of attendances in the hemodialysis sector, number of activations via BIP, total expenses with the over-warning and overtime regime and verification of possible changes in quality. assistance provided. The minimum monitoring to evaluate the effectiveness of the performed intervention should be three months.

Results

In order to better understand the issue of costs with the over-warning and overtime regime in the Hemodialysis sector, a brief search was made in the relevant literature.

Currently, the Hemodialysis sector of the Hospital Beneficente de Senhoras Sírio Libanês (HSL) works with internal and external services, working 24 hours a day, in the following shifts: 7:00 am to 12:00 pm, 1:00 pm to 4:00 pm and 17:00 to 21:00 hours; Mondays, Wednesdays and Fridays there is a shift from 22:00 to 06:00. Regarding the number of nursing professionals, there are 5 nurses and 20 nursing technicians.

Considering the great demand for this service, there was a need to implement a differentiated work regime, so that all hemodialysis services in critical areas could be performed at different times (in addition to business hours). Then the regime of alert and overtime came into effect for the nursing technicians of hemodialysis (these are the professionals responsible for the procedures during this process), the other professionals involved in the process remained with their respective working hours.

Putting this regime into practice has great repercussions for both assistance and management. Thinking from the point of view of health service management, extending the workday directly implies an increase in costs. The professionals involved in this regimen (not all in the unit) remain with a BIP for a specified period, if there is activation during this period, the professional must

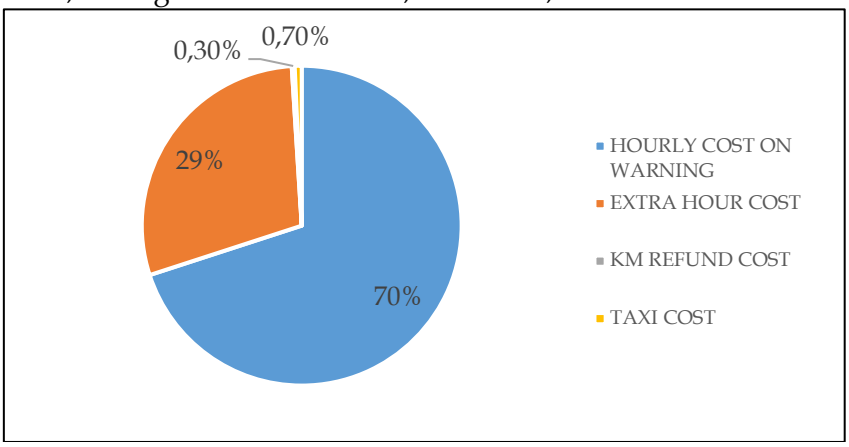
go to the institution to perform hemodialysis on a given patient. In addition to the usual salary of professionals, there is an additional cost with the BIP Hour, Extra Hour, KM Reimbursement and Taxi.

For a better understanding of this reality and subsequent survey of actions, a cost survey was carried out with a regime of alert and overtime in the hemodialysis sector of HSL from 11/16/2015 to 05/15/2017, totaling the analysis of 18 months. Such data were obtained through time sheets, over-warning scale, description of overtime, taxi payment vouchers and proof of payment of mileage reimbursement. During this period, the cost of the warning and overtime regime was found to be R $ 198,996.59, an amount composed of the amount paid for hours on notice, overtime reimbursement of mileage and taxi (Table 1).

Table 1 – Cost distribution with over-warning and overtime regime in the Hemodialysis sector of the Hospital Beneficente de Senhoras Sírio Libanês, São Paulo, 2017.

	Average cost /month in $	Cost in 18 months on $
Time on warning	7.695,81	138.524,55
Extra Hour	3.230,86	58.155,40
Mileage reimbursement	43,68	785,84
Taxi	85,04	1.530,80
Total	11.005,39	198.996,59

Figure 2 - Percentage of overtime and overtime costs in the Hemodialysis sector of Hospital Beneficente de Senhoras Sírio Libanês according to the variables overtime on notice, overtime, mileage and taxi refunds, São Paulo, 2017.



Considering that about 70% of the cost with this regime is due to the time warned, we also sought to evaluate the profile of the opening hours, in order to better understand this problem and identify opportunities for adjusting financial resources. During the analyzed period, there were 281 BIP firings, the most frequent firing times were 19:00 hours (61.2%), 13:00 hours (7.8%), 12:00 (5.3%) and 11:00 hours (2.5%). It was noted that during the night there are practically no activations via BIP; if we consider the period from 00:00 to 06:00 in the morning, there are only 2 activations, corresponding to 0.6% of the total activations from 16/11/2015 to 15/05/2017 (Figure 2).

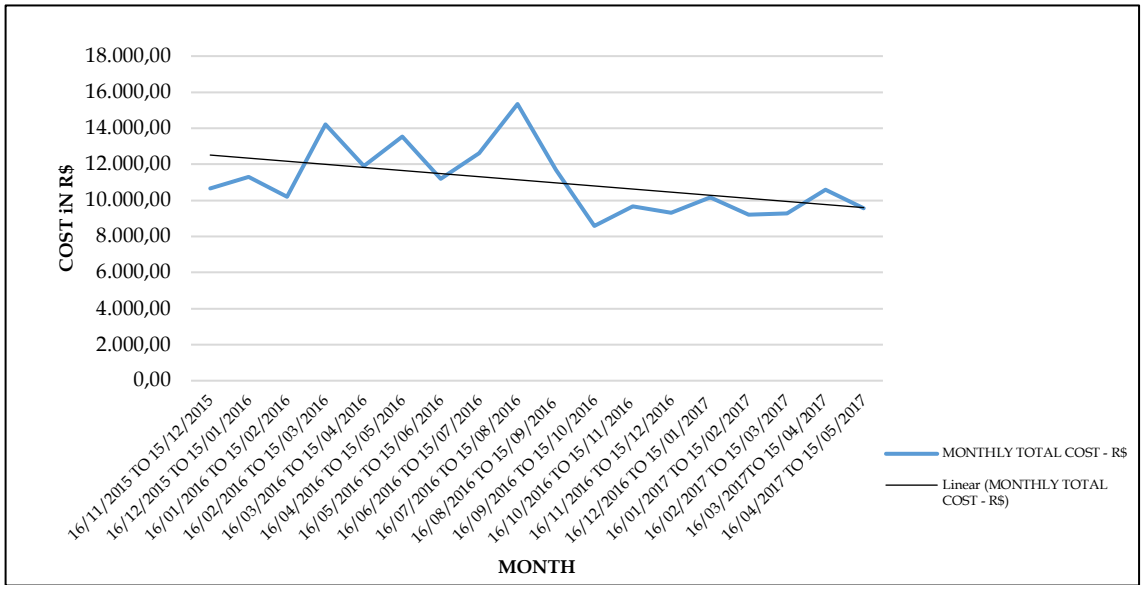
Of the two operations performed between 00:00 and 06:00 hours, one of them was on December 8, 2015, at 4:50 am for hemodialysis in the patient JAON. The client in question was admitted to the institution on December 3, 2015 to perform cineangiography and surgical programming (diagnosis of major aortic

stenosis), even in the preoperative period he developed acute pulmonary edema, associated with worsening renal function after cineangiocoronariography, with need for dialysis session. JAON performed only 2 dialysis sessions before surgery, after the procedure the kidney function remained stable, not needing new sessions; was discharged to the home in 19/12/2015.

The other activation was performed on August 6, 2016, at 6:00 am at the request of the unit, considering that the demand for the morning period was high.

The graph below shows the distribution of the total cost with the over-warning and overtime regime in the Hemodialysis sector, there is a downward trend in costs (with small fluctuations) from 07/16/2017. The decline in costs occurred after adjusting the scale and working shifts according to the demand for the service (Figure 3).

Figure 3 – Distribution of the total cost with the over-warning and overtime regime in the Hemodialysis sector of the Hospital Beneficente de Senhoras Sírio Libanês, São Paulo, 2017.



The data described above show a high financial cost with this regime, with the need for a more careful analysis. For a better understanding of this problem and the associated causes, the diagram below was constructed:

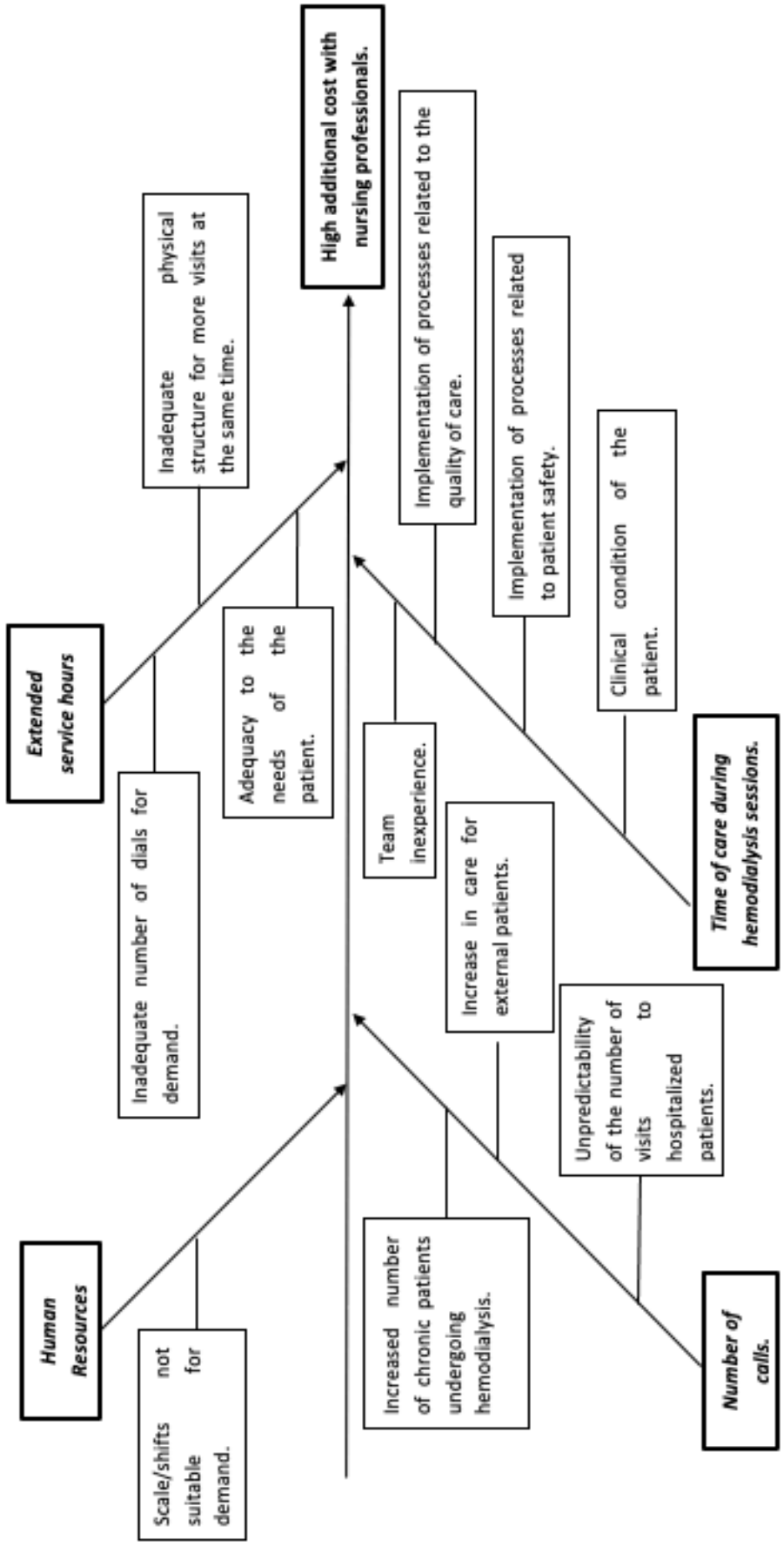


Figure 4 - Diagram on the additional cost with nursing professionals in the Hemodialysis Sector of the Syrian Lebanese Hospital, 2017.

Intervention Proposal

The steps taken to idealize this proposal were carried out as described in the table below:

Table 2- Description of the application proposal operations.

Action	Strategy	Actors Involved
Survey of relevant literature	Search for pertinent information in articles, books, scientific articles and Brazilian legislation on the subject.	Resident and Coordinator of the hemodialysis sector.
Recognition of the problem	Data collection through documents (time sheets, over-warning scale, overtime description, taxi payment vouchers and mileage reimbursement).	Resident, Coordinator of the hemodialysis sector and administrative professionals (Personnel Administration and Compensation sector.
Elaboration of intervention proposals	Analysis of the financial viability of the interventions and their impact on assistance (quality and safety).	Resident, Coordinator of the hemodialysis sector and employees of the hemodialysis sector.
Forwarding the proposal to the responsible managers	Sending the written proposal via e-mail with all the surveys carried out.	Resident, Coordinator of the hemodialysis sector.

In order to rationalize financial resources in the Hemodialysis sector, in order to maintain and or expand the financial viability of this service, without influencing the quality and safety of the assistance provided, some measures are proposed, as described in the tables below:

Table 3- Description of the action of Proposal 1 to reduce additional costs with the over-warning and overtime regime.

Proposal 1	Cost/mont.	Cost em 18 months.	Financial savings/month. *	Financial savings in 18 months. *
Action 1. Hiring 2 nursing technicians to work in periods of greatest demand.	~$ 9.265,00	~$ 166.608,00	~$ 1.799,36	~$ 32.388,59

* Total savings considering only the over-warning and overtime regime as a whole.

Table 4- Description of the actions of Proposal 2 to reduce additional costs with the over-warning and overtime regime.

Proposal 2	Cost/mont.	Cost em 18 months.	Financial savings/month. *	Financial savings in 18 months. *
Action 1. Change the notice period, effective: - Monday, Wednesday and Friday: 19:00 to 00:00.	~$1.533,60	~$ 27.604,80	~$ 6.162,21	~ $ 110.920,75

Action 2. Change the notice period, effective: - Tuesday, Thursday, Saturday and Sunday: 7:00 pm to 3:00 am.	~$ 3.271,68	~$ 58.890,24	~ $ 4.424,13	~ $ 7.634.31
Sum total economy *	--	--	~$ 10.586,34	~ $ 118.555,06

*Economia total considerando apenas o regime de sobre aviso.

Plan management

The action plan for this Application proposal was developed based on the reality of the hemodialysis sector at Hospital Sírio Libanês of the Bela Vista unit. However, it is worth mentioning that prior to the implementation of any measures, it is necessary the approval of the local managers and later of the institution's top management.

The forecast of the team involved in this proposal will vary according to the chosen proposal. In the case of proposal 1, in addition to the existing quantity, it will be necessary to have two more professionals (nursing technicians), with an additional budget to the institution's expenses sheet of ~ $ 9,256.00 per month. Proposal 2, on the other hand, would include only the professionals already hired by the institution, with no additional costs to those already existing. The role of managers, especially nurse managers and doctors, are fundamental for the proposal to be put into practice.

The future assessment and monitoring of the feasibility of the intervention proposal should be carried out continuously over time, monitoring of which is the responsibility of the managers of this unit. Such an assessment should be carried out based on the monitoring of the number of visits in the hemodialysis sector, the number of calls via BIP, total expenses with the over-warning and overtime regime and verification of possible changes in the quality of care provided. A minimum three-month monitoring is recommended for a real assessment of the savings made.

Final Considerations

The action plans evidenced in this Application proposal were prepared in accordance with the reality of the Hospital Beneficiente de Senhoras Sírio Libanês and the Hemodialysis Sector of this institution. However, it is worth mentioning that due to the unavailability of time and the need for approval by the managers involved, it was not possible to put them into practice. It is suggested the implementation of any of the proposals described and their monitoring over a minimum of three months, in order to analyze their effectiveness and make changes if necessary.

The construction of this proposal contributed in a way to improve and develop theoretical and practical knowledge about financial management and optimization of resources, and can also serve as an incentive / model for other units to initiate actions aimed at the rationalization of financial resources.

As a limitation of this work, the short period for the development of the proposal (culminating in the non-implementation of it) stands out, which consequently prevents the evaluation of the possible savings resulting from the actions. Another limitation to be cited was the lack of comparison between the costs spent on hemodialysis procedures and the amounts received for carrying them out, therefore, it cannot be analyzed whether the process as a whole is profitable or costly for the institution.

It points out the need to expand actions / studies and benchmarking in the scope of cost management, considering the gap found in the literary search on the subject; and above all the survival of this organization, which is in an increasingly competitive market.

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