HOSPITAL MATERIAL COSTS: PERCEPTION OF PROFESSORS, UNDERGRADUATE STUDENTS, AND NURSING TEAM

CUSTOS DE MATERIAIS HOSPITALARES: PERCEPÇÃO DE DOCENTES, ACADÊMICOS E EQUIPE DE ENFERMAGEM

ABSTRACT

Objective: to identify the perception and importance attributed to the costs of consumable hospital materials by professors, undergraduate students, and nursing team in a teaching hospital. Method: this is a field study, quantitative, with the participation of 385 subjects who answered to a questionnaire, conducted in August and September 2011. The collected data were tabulated in the software Microsoft Excel and presented into tables. The study was approved by the Research Ethics Committee of Faculdade de Medicina de São José do Rio Preto (FAMERP), under the Protocol 6,082/2007. Results: among the four groups, knowledge on costs proved to be deficient during the individuals’ education and only in some cases it has been approached during professional practice. Conclusion: we found out, in general, a lack of knowledge and perception that the greater the understanding of products’ value, the better their use will be, with a consequent wastage decrease. Therefore, there is a need that Nursing courses address this content and that guidelines are offered in the hospital environment, contributing to increase awareness and reduce costs. Descriptors: Perception; Cost; Material; Nursing.

RESUMO

Objetivo: identificar a percepção e importância atribuída aos custos de materiais hospitalares de consumo por docentes, acadêmicos e equipe de enfermagem em um hospital de ensino. Método: trata-se de estudo de campo, quantitativo, com a participação de 385 sujeitos que responderam a questionário, realizado em agosto e setembro de 2011. Os dados coletados foram tabulados no programa Microsoft Excel e apresentados em tabelas. O estudo foi aprovado pelo Comitê de Ética em Pesquisa da Faculdade de Medicina de São José do Rio Preto (Famerp), sob o Protocolo n. 6.082/2007. Resultados: nos quatro grupos estudados, o conhecimento sobre custos mostrou-se deficiente durante a formação dos indivíduos e somente em alguns casos ele foi abordado durante a atuação profissional. Conclusão: constatou-se, de modo geral, déficit de conhecimento e percepção de que quanto maior for o entendimento acerca do valor dos produtos, melhor será sua utilização, com consequente diminuição do desperdício. Portanto, é necessário que os cursos de Enfermagem contemplem esse conteúdo e que sejam oferecidas orientações no ambiente hospitalar, contribuindo para maior conscientização e redução de gastos. Descriptors: Percepção; Custos; Material; Enfermagem.

RESUMEN

Objetivo: identificar la percepción y la importancia atribuida a los costos de materiales hospitalarios de consumo por los docentes, académicos y el equipo de enfermería en un hospital de enseñanza. Método: esto es un estudio de campo, cuantitativo, con la participación de 385 sujetos que respondieron a un cuestionario, realizado en agosto y septiembre de 2011. Los datos recogidos fueron tabulados en el software Microsoft Excel y presentados en tablas. El estudio fue aprobado por el Comité de Ética en Investigación de la Facultad de Medicina de São José do Rio Preto (FAMERP), bajo el Protocolo 6.082/2007. Resultados: en los cuatro grupos estudiados, el conocimiento acerca de los costes se mostró deficiente durante la formación de los individuos y sólo en algunos casos se le acercó durante la práctica profesional. Conclusión: se constató, en general, un déficit de conocimiento y percepción de que cuanto mayor es la comprensión sobre el valor de los productos, mejor será su utilización, con consiguiente reducción del desperdicio. Por lo tanto, es necesario que los cursos de Enfermería contemplan ese contenido y que se ofrezcan orientaciones en el ambiente hospitalario, contribuyendo a una mayor concienciación y reducción de gastos. Descriptores: Percepción; Coste; Material; Enfermería.

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INTRODUCTION

Cost management systems in the hospital sector are important for the health care field and they aim at containing costs without service quality loss, and there is a need for involving not only the administrative area, but also managers of the different units that make up a hospital organization, since each member must contribute, with her/his knowledge, to implement and control these systems.1

The professionals who manage hospital units must develop some kinds of knowledge that help them in decision making and resource allocation, because these generate costs in the organizations. For this, the professionals have to determine which materials are needed for developing clinical or supportive activities, considering the quantitative, qualitative, and financial aspects.2

Hospital costs are defined as the expenses that the hospital has with care. When assigned to the care of a particular patient, they include the direct costs involved with work plus an amount of money related to general expenses, such as personnel, maintenance, and equipment.3,4

The exponential growth in health costs is directly related to a number of factors, such as: the use of new technologies, the increase in population’s life expectancy, the growth in demand through universal access to health care, the lack of skilled labor force, resulting in low productivity, poor management of organizations, due to administrative inability of health care professionals, non-implementation of cost control systems, and wastage.5,6

The growing increase in costs requires that professionals obtain knowledge on the subject and, as a consequence, its practical application, where we seek to rationalize the resource allocation process, the balance between costs and financial resources, and the optimization of results.7 Cost management in nursing is an administrative process that help nurses’ decision making with regard to the effective rationalization in the allocation of available resources, in order to achieve results consistent with the health care needs of the clientele and the institutions.7

Information on costs as a key resource of nursing management stands out in the current managerial movement. It must be understood not only as a technical or economic issue, but also a behavioral one, because it represents the development of a competent management that is compatible with the mission of providing the population with health care.7,8

Taking into account the magnitude of the problem presented, we point out as our study object knowledge on hospital material costs on the part of nursing professionals and we investigate whether it can contribute to decrease wastage and reduce expenses in a teaching hospital. Thus, this research contributes to a situational diagnosis with regard to aspects aimed at costs, considering that professionals at hospital institutions must know prices and worry about managing materials used and create control strategies related to cost containment, since it is a responsibility of everyone and each individual has to play her/his role.

It is essential to address contents on costs in technical and undergraduate courses in Nursing, because prospective professionals are agents of possible interventions for minimizing wastage, with greater professional awareness. This research shows to be relevant for nursing because it identifies the importance attributed to hospital material costs and the knowledge of professors, undergraduate students, nurses, and nursing technicians acquired during their studies or in professional or practice. It is expected that the results point out the agents who can facilitate the education process of nurses and nursing technicians with regard to cost control, particularly consumable hospital materials; a large part of the latter are used by the nursing team.

Controlling and checking materials are among nurse’s responsibilities, therefore, teaching and clinical nurses should guide the team about costs, stimulating the conscious use of materials, minimizing wastage, thus contributing to greater responsibility both of the education and care professional. Given the above, this study aims to identify the perception and importance attributed to hospital material costs according to the opinion of professors, undergraduate students, and nursing team in a teaching hospital.

METHOD

This is a descriptive study, with a quantitative approach, carried out in a teaching hospital in the countryside of the state of São Paulo, Brazil, providing quaternary care. The population consisted of professors and undergraduate students from a Nursing course and nurses, nursing technicians, and nursing assistants working at the morning, afternoon, and night shifts, totaling 385 participants.
Hospital material costs: perception of professors...

The inclusion criteria were: agreement to participate in the study among all groups; being a professor or student at the fourth year of the Nursing course of Faculdade de Medicina de São José do Rio Preto (FAMERPE); working at the teaching hospital used for developing clinical education and supervised internship.

The exclusion criteria were being away within the data collection period (vacation, extended work leave, sick leave, or maternity leave) or not accepting to participate in the research.

For collecting data, we used an instrument describing some materials routinely used by nursing team, so that the professional answers about the unit value (in real). The collected data were tabulated using the software Microsoft Excel. The statistical analysis was based on the application of a questionnaire designed to evaluate the knowledge of nursing professionals on costs, in order to characterize the sample with regard to the percentage of professors, undergraduate students, nurses, nursing technicians, and nursing assistants and check for possible associations between the variables under study, using the percentage values of the statistical association test (chi-square) at a significance level of 0.05.

Sampling characterization was restricted to the professional status of each participant, with issues concerning the evaluation of knowledge about hospital material costs characterized by the occurrence of approach to this issue during the undergraduate course and in the professional life, as well as the issue of wastage.

For professors and undergraduate students at the Nursing course, we addressed aspects on the importance knowing about costs during the undergraduate course, in addition to the time when this content must be addressed. According to the Resolution CNS 196/96, the study was approved by the Research Ethics Committee of FAMERP, under the Protocol 6,082/2007.

### RESULTS

Out of 385 participants, 139 (36.2%) were nurses, 29 (7.6%) professors, 80 (20.8%) undergraduate students, 107 (27.8%) nursing assistants and technicians.

#### Table 1. Percentage distribution of the approach to costs during the undergraduate life and relation to decreased wastage in the perception of nursing students. São José do Rio Preto, São Paulo, Brazil, 2011.

<table>
<thead>
<tr>
<th>Approach during the undergraduate life</th>
<th>Decreased wastage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes: 25 (31.25%)</td>
<td>4 (16.0%)</td>
<td>21 (84.0%)</td>
</tr>
<tr>
<td>No: 55 (68.75%)</td>
<td>0 (0.0%)</td>
<td>55 (100%)</td>
</tr>
<tr>
<td>Total: 80 (100%)</td>
<td>4 (5.0%)</td>
<td>76 (95.0%)</td>
</tr>
<tr>
<td>p value</td>
<td>0.018</td>
<td></td>
</tr>
</tbody>
</table>

* Reference p value = 0.05

Regarding the approach to the price of hospital materials during the undergraduate course, out of 80 students, 25 (31.25%) answered that it was not addressed during the undergraduate course and 55 (68.75%) answered yes. As for knowledge on the subject related to decrease in wastage, 4 (5.0%) answered that it would not decrease wastage and 76 (95.0%) answered that it is important to raise awareness and reduce expenses.

#### Table 2. Percentage distribution of the approach to costs during the undergraduate life and professional practice in the perception of professors at the undergraduate course in Nursing. São José do Rio Preto, São Paulo, Brazil, 2011.

<table>
<thead>
<tr>
<th>Approach during the undergraduate life</th>
<th>Approach during professional practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes: 22 (75.86%)</td>
<td>8 (80.0%)</td>
</tr>
<tr>
<td>No: 7 (24.13%)</td>
<td>2 (20.0%)</td>
</tr>
<tr>
<td>Total: 29 (100%)</td>
<td>10 (34.48%)</td>
</tr>
<tr>
<td>p value</td>
<td>0.017</td>
</tr>
</tbody>
</table>

*Reference p value = 0.05

Throughout the undergraduate life, out of 29 professors, 22 (75.86%) answered that this subject was not addressed during the undergraduate course and 7 (24.13%) answered that it was. As for the approach to the subject in professional life, 10 (34.48%) showed no approach, while 19 (65.51%) reported some approach.
Out of 107 nurses and assistants, 76 (70.1%) answered that the theme was not addressed during the undergraduate course and 31 (28.90%) said it was. Regarding to the fact that knowledge on the subject is related to decrease in wastage, 37 (34.50%) believe it is not and 70 (65.50%) answered that it is important and can reduce wastage.

Out of 139 nurses, 58 (41.7%) said that the subject was not addressed during the undergraduate course and 81 (58.3%) answered yes. They were also asked about knowledge on hospital material costs related to decreased wastage and 10 (7.2%) believe it would not decrease, while 129 (92.8%) answered that knowledge is important and it can reduce wastage.

### DISCUSSION

The productive process in the health care field is very complex and the hospital is a center of interaction between many disciplines and professions, incorporating technologies, generating a care model with a huge variety of items and diversity degrees. A study claims that spending on materials in the hospital environment represents around 15% to 25% of current expenditure, and that, with a certain frequency, around 3,000 to 6,000 consumption items are purchased.9

The importance of nursing professionals’ knowledge with regard to the costs of hospital materials is clear and the complexity is not restricted only to the quantity of items or their cost, but also the productive process, which usually remains distanced from support systems, complicating this administration.10

Another study also demonstrates the importance of knowledge on costs, in order to prepare the student to face professional challenges, seeking to deepen the education of undergraduate students by means of interactive activities between professors, students, professionals, operators in the market, and health care and research institutions.12

It is worth highlighting the role of educational institutions in the search for improving the quality of health care services, being essential to develop the students’ critical and reflective thinking, enabling them to develop actions focused on comprehensive care, in order to evaluate the work and management processes in health care based on clinical results, something which allows achieving excellence in the services provided.14

Regarding professors, 75.86% say that content on costs was not addressed during the undergraduate course and 65.51% reported that they learned during professional practice, 37 (34.50%) believe it is not and 70 (65.50%) answered that it is important and can reduce wastage.

### Table 3. Percentage distribution of the approach to costs during the undergraduate life and professional practice in the perception of nursing technicians and assistants in the teaching hospital. São José do Rio Preto, São Paulo, Brazil, 2011.

<table>
<thead>
<tr>
<th>Approach during the undergraduate life</th>
<th>Approach during professional practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes: 76 (70.1%)</td>
<td>No: 31 (28.9%)</td>
</tr>
<tr>
<td>No: 31 (28.9%)</td>
<td>17 (54.8%)</td>
</tr>
<tr>
<td>Total: 107 (100%)</td>
<td>37 (34.50%)</td>
</tr>
<tr>
<td>p value = 0.019</td>
<td>70 (65.50%)</td>
</tr>
</tbody>
</table>

* Reference p value = 0.05

### Table 4. Percentage distribution of the approach to costs during the academic life and professional practice in the perception of nurses in the teaching hospital. São José do Rio Preto, São Paulo, Brazil, 2011.

<table>
<thead>
<tr>
<th>Approach during the undergraduate life</th>
<th>Professional approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes: 58 (41.7%)</td>
<td>No: 8 (13.8%)</td>
</tr>
<tr>
<td>No: 81 (58.3%)</td>
<td>2 (2.5%)</td>
</tr>
<tr>
<td>Total: 139 (100%)</td>
<td>10 (7.2%)</td>
</tr>
<tr>
<td>p value</td>
<td>0.015</td>
</tr>
</tbody>
</table>

* Reference p value = 0.05

Regarding the approach to the price of hospital materials during the undergraduate course, in this study, 55 (68.75%) students obtained it and 76 (95.0%) reported that it is important to decrease wastage. Corroborating this study, the research related to the prospects of undergraduate students on the quality of hospital nursing care found out that 62.8% of these students appreciate technical and theoretical kinds of knowledge, being material resources among the most important, prioritizing quality of care based on appreciation of equipment and materials used.11

Another study also demonstrates the importance of knowledge on costs, in order to prepare the student to face professional challenges, seeking to deepen the education of undergraduate students by means of interactive activities between professors, students, professionals, operators in the market, and health care and research institutions.12 In this context, undergraduate courses develop competences aimed at policies related to the management of material resources.13

It is worth highlighting the role of educational institutions in the search for improving the quality of health care services, being essential to develop the students’ critical and reflective thinking, enabling them to develop actions focused on comprehensive care, in order to evaluate the work and management processes in health care based on clinical results, something which allows achieving excellence in the services provided.14

Regarding professors, 75.86% say that content on costs was not addressed during the undergraduate course and 65.51% reported that they learned during professional practice,
something contrasting with study of health economic education, which emphasizes the importance of addressing this theme in Nursing courses, where instructors and employers must provide prospective nurses with means to take responsibilities on costs.15

The professor, responsible for professional training, committed to the managerial process of health care institutions, requires knowledge on costs, recognizing her/his role as an agent sharing information, helping the undergraduate students to achieve positive results, as well as seeking balance between quality, quantity, and resources for providing care.16

To occur the required dissemination of knowledge on costs, there is a need for training professors with regard to the theme, encouraging her/his participation in seminars, courses, improvement sessions, or graduate disciplines which enable deepening her/his knowledge on this area.15

As for nursing assistants and technicians, this study shows that these professionals have had little contact with the subject during their undergraduate and professional life, however, they believe that if the price of hospital materials used could be addressed during professional practice, there would be decreased spending due to greater awareness and appreciation.

Hospital sectors must show the planning of materials, identifying the resources needed, in a participatory way with the whole work team. Besides, the concept of cost must be understood as something going beyond an economic issue, but also behavioral, as we observe the relation of cost to the responsibility level. However, the technical staff usually sees a cost system as a way of controlling and, thus, the individuals are resistant to the theme.16

Material management depends on the involvement of professionals directly related to the areas where the actual consumption occurs and, particularly, the work of managers responsible for cost centers, with regard to planning, control, and proper use, in order to decrease wastage and improve effectiveness.17

Out of 139 nurses, 41.7% said that the issue was not addressed during undergraduate course and 58.3% answered that it was, while 92.8% believe that knowledge is important to decrease wastage. A study evaluating nursing managers’ knowledge about the concept of hospital costs verified that, although working in hospitals with methodology implemented for calculating costs, most professionals’ knowledge is poor, something that makes it difficult to use this management tool.18

Hospital costs are key aspects of nursing management. The effort to improve the effectiveness of health care systems goes through the systematic management of health care that has among its principles the accountability of professionals with regard to the cost of services provided in daily care. This principle encourages a careful and rational use of technological resources and materials, drawing attention to the fact that we may not separate the technical and financial dimensions. This issue needs to be put into practice in relation to the experience of nurses in their workplace.1,13

Every nursing professional involved in the clinical or managerial work process in health care institutions need some knowledge about hospital costs, in order to achieve positive results with regard to quality of care. A system with accessible, reliable, user-friendly, and agile information constitutes a requirement for planning, directing, and controlling nurse’s activities.7 The number of scientific papers on Nursing addressing this theme is still small and they do not explicitly show how and at what time professors and hospital managers have to discuss and advise on this subject.

CONCLUSION

We found out that nursing professionals’ knowledge about hospital material costs shows to be poor. Most of them considered it important to develop this theme during the technical and undergraduate Nursing courses and they believe it may lead to greater professional awareness, better use of materials and, as a consequence, waste prevention. Therefore, there is a need for including and developing this content through professors and hospital managers, in order to clarify prices for professionals and undergraduate students at Nursing courses, stimulating the conscious use of materials, and involving everyone in the process for reducing hospital costs.

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