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RESEARCH

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WASTE IN INTENSIVE CARE UNIT IN THE VIEW OF PROFESSIONALS BY BARDIN'S METHODOLOGY

O desperdício em uma unidade de terapia intensiva na visão dos profissionais pela metodologia de Bardin
Desperdícios en una unidad de cuidados intensivos a la vista de los profesionales según la metodología de Bardin

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ABSTRACT

Objective: to evaluate the opinion of health professionals about waste in an Intensive Care Unit. **Method:** the method used was qualitative. An interview was conducted with 66 professionals from an Intensive Care Unit and analyzed by the Bardin method. **Results:** through the speeches obtained in each table, were identified and highlighted the units that allowed the creation of two tables, the first made it possible to construct the category called “Health cost management: the waste of materials in ICU”. Table 2, on the other hand, made it possible to obtain two categories, “Professional training in health: the optimization of ICU cost management” and “the insertion of the ICU cost management process”. **Conclusion:** the first step in the fight against waste is to know the institutional reality. Managers need to study the percentages and sources of their service waste and their impact on costs.

KEYWORDS: Costs and cost analysis; Hospital costs; Material resources in health; Nursing.

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RESUMO

Objetivo: avaliar a opinião dos profissionais de saúde sobre o desperdício, em uma Unidade de Terapia Intensiva. **Método:** o método utilizado foi o qualitativo. Foi realizada uma entrevista com 66 profissionais de uma Unidade de Terapia Intensiva e analisados pelo método de Bardin. **Resultados:** através dos discursos obtidos em cada quadro, foram identificadas e destacadas as unidades de registro que permitiram a criação de dois quadros, o primeiro possibilitou a construção da categoria que denominada “Gestão de custos em saúde: o desperdício de materiais em UTI”. Já o quadro 2, possibilitou a obtenção de duas categorias, “Capacitação profissional em saúde: a otimização da gestão de custos em UTI” e “a inserção do processo de gestão de custos em UTI”. **Conclusão:** o primeiro passo para o combate ao desperdício é conhecer a realidade institucional. Os gestores necessitam estudar os percentuais e fontes de desperdício de seu serviço e o impacto desses nos custos.

DESCRITORES: Custos e análise de custos; Custos hospitalares, Recursos materiais em saúde, Enfermagem.

RESUMEN

Objetivo: evaluar la opinión de los profesionales de la salud sobre los desechos en una unidad de cuidados intensivos. **Método:** el método utilizado fue cualitativo. Se realizó una entrevista con 66 profesionales de una Unidad de Cuidados Intensivos y se analizó mediante el método Bardin. **Resultados:** através de los discursos obtenidos en cada tabla, se identificaron y destacaron las unidades de registro que permitieron la creación de dos tablas, la primera permitió construir la categoría denominada “Gestión de costos de salud: el desperdicio de materiales en la UCI”. La Tabla 2, por otro lado, permitió obtener dos categorías, “Capacitación profesional en salud: la optimización de la gestión de costos de la UCI” y “la inserción del proceso de gestión de costos de la UCI”. **Conclusión:** el primer paso en la lucha contra el desperdicio es conocer la realidad institucional. Los gerentes deben estudiar los porcentajes y las fuentes de desperdicio de sus servicios y su impacto en los costos.

PALABRAS CLAVE: Costos y análisis de costo; Costos de hospital; Recursos materiales en salud; Enfermería.

INTRODUCTION

Waste in healthcare institutions is a reality that is often neglected, despite the fact that it directly affects healthcare costs. This can be understood as the use without necessity, without purpose, and without a defined objective. Waste comprises actions that do not add value to the product or service, but generate unnecessary costs and expenses.¹

Cost management is extremely important in the health sector and has been attracting more and more attention from managers, mainly due to the increase in costs in this area, which implies the need to minimize spending and better resource allocation to maintain the economic integrity of the institutions.² In this sense, managers have turned their attention to a large and avoidable source of spending within health institutions: waste.³

The problem can be even greater when waste is not measured, which makes its cost invisible, hindering the awareness of those involved in the issue and hindering actions to reduce these losses.

The sectors with the highest costs in hospitals are those with patients in a more critical clinical condition, such as the Intensive Care Unit (ICU), where complex procedures are performed, which end up burdening the hospital bill, and consequently represent a place where several sources of waste are reported.⁴

Healthcare costs have been increasing exponentially, causing the scarcity of available resources, which makes it necessary to acquire managerial knowledge that contributes to cost restriction and efficient resource allocation.⁵⁻⁶

In the literature, studies involving costs and waste show that according to health professionals, the greatest source of waste is related to material resources, which generates an estimated annual

cost of approximately 479 million reais. The waste related to these resources can occur from the purchase of stocks of questionable quantity and quality to the use of inadequate form and quantity. Thus, scholars have been indicating the use of management tools to change the reality of waste in hospitals and to maintain their economic viability.⁵⁻⁷

The inefficiency of the managerial process in healthcare, administrative incapacity, and lack of knowledge about costs of procedures, inputs, and equipment may compromise institutional finances and increase avoidable costs.⁸

Since 1982, the World Health Organization (WHO) has indicated that nurses have the potential to ensure cost-effective care. Studies have shown that nurses are responsible for 40 to 50% of hospital billing.⁹

In this sense, the objective of this study was to evaluate the opinion of health professionals about waste in an ICU, using Bardin's method.

METHOD

This is a descriptive-exploratory study, since the speeches were recorded, analyzed, and interpreted, without any interference from the researcher. The method used was qualitative, since the subjects' speeches obtained in the interviews were used to apply Bardin's methodology.

The study was carried out in the Intensive Care Unit (ICU) of a private healthcare institution, located in the municipality of Rio de Janeiro.

Interviews were held with the ICU nursing and medical staff, since these are the professionals who participate in the procedures

that demand the use of most of the material resources used in the ICU. The nursing team has a total of 10 nurses and 36 nursing technicians. The medical team has 21 physicians. Professionals were excluded from the study if they were on leave, withdrawn or transferred from the unit's staff.

The interviews were then analyzed with regard to discourse analysis and from these data the inventory charts were built, through content analysis, with the classification of the speeches by analogy and the consequent construction of the nuclear ideas from the categorization process of the professionals' speeches.

According to Bardin, "Content analysis is a set of communication analysis techniques. It aims to organize and treat the information obtained through the speeches and discourses of the participants of a particular study, enabling a nucleus of related ideas and categorization of themes. The information obtained is broken down into categories that gather under a generic title, a group of elements with related ideas."^{10,31}

For Bardin, the process of establishing categories has three stages: pre-analysis, exploration of the material, and treatment and interpretation of the results. During pre-analysis the source must be exhaustively investigated, and must obey four essential rules, they are: Rule of exhaustiveness, rule of representativeness, rule of homogeneity and rule of pertinence.¹⁰

Regarding the exploration of the material, this is the stage in which the structuring of the speeches occurs through the making of inventories and the classification by analogy, which aims at organizing the registration units to allow a better analysis and discussion. And in the third stage, the thematic categories are highlighted through the preparation of the inventory table.¹⁰

In all stages of the study, the ethical principles clarified in Resolution No. 466/2012 of the National Health Council and international standards for research with human beings were respected. It was approved by the Research Ethics Committee of the Federal University of the State of Rio de Janeiro, under opinion no. 812.595 of September 30, 2014.

RESULTS AND DISCUSSION

The interview was carried out with professionals from the ICU. The sector had a total of 66 employees, 10 nurses, 21 physicians and 35 nursing technicians. Of these, 15 professionals had less than 6 months of work in the sector and 5 were not found

because they were on vacation, on leave or had changed shifts. The interview population is detailed in Table 1.

In the interviews, two questions were asked and these were worked through Content Analysis. These questions were: What do you understand by waste and give suggestions for ways to avoid waste. Tables 1 and 2 represent the inventories of these questions.

The inventories were built according to Bardin through the analysis of the speeches obtained in the interviews with the professionals from the medical and nursing teams that make up the ICU staff. The categories and thematic nuclei for tracking the causes of waste and measures to avoid it were then obtained.

The interview script was composed of two questions, totaling 46 speeches each, which were organized and aligned, and the subjects were coded by the letter S, the number with the chronological order of the interviews and the professional category in which they fit. After organizing the interviewees' speeches, the contents of the messages were compared through classification by analogy.

It is worth noting that the four rules defined by Bardin were followed (completeness, representativeness, homogeneity, and pertinence of the speeches), as well as the fundamental steps for the process

The fundamental steps for the categorization process were followed (pre-analysis and exploration of the material) and, finally, the treatment and interpretation of the results through nuclei¹⁰. The frequencies relative to the speeches treated were presented in charts 1 and 2, which present a synthesis of some of the responses obtained.

Through the speeches obtained in each table respectively, the following registration units were identified and highlighted:

Q1 – Materials used in excess; Using materials without need; Discarding things; Using material inadvertently; Opening a material that you will not use.

Q2 – Protocol and continuing education; Make the team aware; Train professionals; Wait for what is being used to finish and use another; before you enter the bed, you check what is going to be used; Communication; Planning; Use of quality materials and training of professionals; Satellite pharmacies.

Thus, Chart 1 allowed the construction of the category "Health cost management: the waste of materials in the ICU".

As for Chart 2, from the analysis of the registration units it was possible to obtain two categories, "Professional training in health: the optimization of cost management in the ICU" and "the insertion of the cost management process in the ICU".

Table 1 – Identification of the professional categories interviewed, Rio de Janeiro-RJ, Brazil, 2015

Category	Total employees	Total respondents	Less than 6 months	Not found	% respondents
Nurse	10	7	3	0	70%
Physician	21	11	7	3	52%
Nursing Technician	35	28	5	2	80%
Total	66	46	15	5	70%

Source: The authors, extracted from master's dissertation, 2015.

Chart 1 – Definition of waste according to the professionals interviewed, Rio de Janeiro-RJ, Brazil, 2015

Original Speech	Subjects involved by analogy classification	Total f	%
S1 "The amount of <u>excess materials used...</u> " (E1)	S1, S7, S10, S17, S18, S38, S42, S44, S46	9/46	19,6
S3 "Using material incorrectly. <u>Discarding</u> things that can be used further down the road..." (TE1)	S3, S8, S10, S19, S24, S41, S43	7/46	15,2
S5 "Everything that is <u>used unnecessarily</u> " (E3)	S2, S4, S5, S7, S11, S14, S15, S17, S19, S21, S22, S26, S27, S29, S30, S33, S34, S39, S45	19/46	41,3
S6 "Use material inadvertently...you end up wasting material that will be needed." (TE3)	S6	1/46	2,2
S8 "Throwing <u>away</u> what further down the line may be needed" (TE4)	S3, S8, S10, S19, S24, S41, S43	7/46	15,2
S11 "Use of <u>unnecessary materials</u> . Opening material without need and using material without real need. (E4)	S2, S4, S5, S7, S11, S14, S15, S17, S19, S21, S22, S26, S27, S29, S30, S33, S34, S39, S45	19/46	41,3
S36 "It's all the <u>stuff you unnecessarily open</u> and don't use. (TE22)	S2, S4, S5, S7, S11, S14, S15, S17, S19, S21, S22, S26, S27, S29, S30, S33, S34, S39, S45	19/46	41,3

Source: the authors, extracted from master's dissertation, 2015.

Table 2 – Suggestions for ways to prevent waste in the opinion of respondents, Rio de Janeiro-RJ, Brazil, 2015

Original Speech	Subjects involved by analogy classification	Total f	%
S1 "Checking the materials that are in the <u>protocol</u> and <u>continuing education</u> will do to avoid that waste" (E1)	S1, S4, S6, S7, S10, S26, S27, S33, S36, S45	10/46	21,7
S2 "Raise staff <u>awareness</u> " (E2)	S2, S3, S9, S16, S24, S36, S46	7/46	15,2
S6 "Recycling of the professionals to have a notion of the cost of each material". (TE3)	S1, S4, S6, S26, S27, S33, S36, S45	8/46	17,4
S14 "Before you get into the bed, you check what is going to be used..." (TE8)	S14, S23, S31, S39	4/46	8,7
S19 " <u>Communication</u> between teams..." (E5)	S19, S38	2/46	4,3
S30 "Proper <u>planning</u> of the institution and <u>supervision</u> of the use of materials" (M6)	S30	1/46	2,2
S33 "Use of quality materials and training of professionals" (M7)	S1, S4, S6, S26, S27, S33, S36, S41, S43, S44, S45	11/46	23,9
S35 "Satellite <u>pharmacies</u> to fractionate or direct that material..." (E6)	S35	1/46	2,2
S36 "Through conversation and <u>continuing education</u> for people to become aware that wasting ends up causing harm to the company..." (TE22)	S1, S2, S3, S4, S6, S9, S16, S24, S26, S27, S33, S36, S45, S46	14/46	30,4

Source: the authors, extracted from master's dissertation, 2015.

1st category: Healthcare cost management: the waste of materials in ICU

Knowledge of the sources of waste related to material resources, equipment, physical structure, processes, and human resources is extremely necessary due to the scarcity of resources and the need to contain them due to the population's demand for health care and its increasing costs.⁷

The management of material, human, and financial resources is of fundamental importance for organizations, whether public or private. Private institutions need to maintain profitability by managing prices in the face of market competition.

To create a cost control plan, it is essential to know the expenses of each unit and the ways to avoid them. When the focus is on waste reduction, managers must know their unit and the main causes of waste.

The speeches presented meet the definitions found for the term waste "the use of available resources in an uncontrolled, abusive, irrational, and inconsequential way".¹ In the registration units found, the terms "in excess", "without need", and "throw away/discard" are often repeated, which characterizes the understanding that waste is something that can be avoided.

Many are the sources of waste in a hospital institution, but the material resources represent a large part of this waste, because besides consuming a large part of the hospital budget, which represents a high monetary value, they are also present in large numbers, because they are essential inputs to health care.

The waste of these material resources, as illustrated by the study participants, can occur when unnecessary materials are used. It can also occur when materials are discarded without being used. As an example, we can mention a dressing, in which the professional separates all the materials that will be used and removes the supplies from their original packaging, therefore

those materials that are not used will be discarded because they have lost their sterile property. Another form of waste occurs with the use of low quality materials that may have defects during use, making necessary the use of other items such as venous and arterial catheters.

Intensive Care Units, because they represent sectors that provide care to critical patients and in which many complications occur during a shift, making it difficult to provide adequate materials to perform the procedures, the waste tends to be greater. Besides this factor, the pace of work is more intense, and the professional must be trained and experienced to perform the activities as "lean" as possible, i.e., performed correctly and with the least possible expenditure of material.

For the performance of a procedure, it is extremely important to have an adequate forecast of materials that must be based on knowledge of the technique to be performed, the clinical condition of the patient in question, and the material available to the professional.

The healthcare team must also be oriented and made aware of the costs involved in performing the procedures and the need to optimize spending in order to maintain the financial health of the institution. The insertion and accountability of the professional as an integral member of the team and a fundamental part of the management process may represent a strategy for minimizing waste.

2nd category : Professional training in healthcare: the optimization of cost management in the ICU

The second category emerged from the speeches obtained in the interview when they were invited to make suggestions on ways to avoid waste in the ICU. Many speeches involved the need for professional training and awareness, issues related to permanent education in health services.

Health professionals in general have an assistential formation, directed to patient care and many consider that the higher the expenditure, the better the final result. The concern with costs is inherent to the managers and many times it doesn't reach the professional at the end of the process, who is the main responsible for the execution of cost reduction actions.

Authors consider that in view of the increase in costs and the importance of nurses in this process, health economics education should begin in the academy with the inclusion of budget planning in the academic curriculum, aiming to bring students closer to cost management and economics content. They also emphasize that professionals working in service management must constantly seek new knowledge about costs in order to achieve a balance between quantity, quality, and limited resources.⁹

Awareness must be the first action of the manager and his team. The professionals must know the cost of the procedures and the value of each input required for their execution. After becoming aware of the problem and the need to commit to reducing it, the professionals must be routinely trained through continuing education.

Continuing education has a fundamental role in health institutions. It acts in the continuous development of the workers' capacity and enables the individual to increase the ability to act within the work environment through the creation of a space to think and do. It is an educational process that aims to promote the knowledge and previous experiences of the workers and enable them to transfer the learning to their work routine.¹¹

Training nursing professionals requires, in addition to adding knowledge obtained in the academy, to constantly resume and update them, adding the experiences obtained in professional practice, and it is extremely important to adopt strategies that encourage the participation of professionals in training processes.¹¹⁻¹² Hospitals in general have had this training service for a few years, but it is still not fully articulated to management processes, especially with regard to costs.¹³

Training and professional qualification through continuing education provide improvement in mortality rate indicators, length of stay of patients in the ICU and number of complications due to avoidable causes. In addition to these factors directly related to quality of care, it promotes improvement in the economic aspects, efficiency and effectiveness in the care of a population increasingly aware of its rights, making its insertion in the daily life of health workers indispensable.¹⁴

Health services management, therefore, encompasses the promotion and maintenance of a quality continuing education service, which enables the professional to fully adapt to the work environment and practices in order to perform the activities conscientiously and effectively, providing the individual with quality care and the employer with the guarantee of using resources in the best possible way and with the best cost-benefit for the institution and the patient.

3rd category: The insertion of the cost management process in ICU

The third category was also derived from the second open question about the professionals' suggestions on ways to avoid waste in the ICU. The registration units obtained allowed the dismemberment into two categories.

The nurse's work is composed of two dimensions, care and management, which are complementary paths. The nurse, throughout history, in addition to care management, has been responsible for managing health care units with respect to the entire physical environment that guides care, and the administration of material resources is among his attributions, in order to maintain the good functioning of the service, promoting the necessary resources so that user care does not suffer interruptions due to insufficient quality and quantity of materials. They are responsible for the forecast, provision, organization, and control of materials, developing the activities of planning, executing, and controlling the flow of materials in the most economical and efficient conditions.

Material resources management aims to ensure control of the supplies needed to carry out the activities of the health services. Health professionals and hospital administrators still lack knowledge and awareness about materials management and its ability

to reduce care costs. Therefore, to reduce waste and optimize the consumption of material resources, it is essential to plan, control, and use them properly.⁷

An important element in cost management is the nurse, as he/she is responsible for the care and registration of care activities. This can contribute to the rational use of material resources, which optimizes billing by reducing expenses and waste.⁹

The administration of material resources performed by nurses does not aim to make this activity merely bureaucratic, but to improve customer care and the working conditions of the nursing team and other members of the multidisciplinary health team, paying attention to the proper use of materials by the health team to avoid waste.

Some professionals also made the suggestion to improve communication among the team and to stimulate awareness. For the managers, this competence is indispensable given the need for communication with the team components to establish goals, identify and solve problems. Among the essential knowledge for the development of this competence are conflict management, negotiation, active listening, organizational communication norms and standards, care methodology, teamwork, and organizational power and culture.

It is up to the nurse, as the manager of the health unit, in this case the ICU, to stimulate communication among the team and especially to know how to transmit information in order to make himself understood about the norms and routines of the service. Regarding waste reduction, dialogue is fundamental to clarify to the health team the need for cost control to maintain the financial viability of the institution.

The professionals first need to know their sector. From the knowledge of the system as a whole and the obtaining of numbers, estimates, values, these must be presented to the team so that they know the waste and then commit to its reduction, and the manager must establish goals through indicators.

Therefore, the control and minimization of waste should be done through planning, creation of protocols, and monitoring, as suggested by the professionals, and improvement in verbal communication with the team seeking to raise awareness of all involved.

CONCLUDING REMARKS

The growing increase in healthcare costs and consequently the emergence of the need to control them for the financial survival of healthcare institutions makes it necessary to adopt strategies to contain spending and increase revenue. Waste represents a significant impact on the costs of health care organizations, and this is an avoidable and controllable factor.

The involvement and commitment of health professionals in the administration of material resources is essential to achieve the established goal, in this case, the reduction of costs. We can cite as an essential element in this process, the nurse, a professional with the necessary knowledge of care and management.

The first step to combat waste is to know the institutional reality. Managers need to study the percentages and sources of waste in their service and their impact on costs, in order to draw strategies for combating avoidable causes, starting in order of priority.

The health team must first be made aware of the objectives defined by their managers, being introduced to the reality of institutional costs and involved as essential agents in the process of change.

We also presented the sources of waste from the point of view of the professionals that make up the team and based on studies found in the literature.

This study allowed us to contribute to future research in the area and to make professionals aware of the theme. Thus, it is expected that managers and health professionals will strengthen their knowledge about costs and containment strategies, create and participate in actions to combat waste.

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