

IMPACTS AND LEGACIES OF A DISASTER IN A UNIVERSITY HOSPITAL: A REFERENCE TO THE PREPARATION

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IMPACTOS Y LEGADOS DE UN DESATRE EN UN HOSPITAL UNIVERSITARIO: REFERENTE PARA LA PREPARACIÓN

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ABSTRACT

Objective: disaster victims care establishes the challenge of preparing for hospital institutions to meet increasing demand, while essential services must continue to work. This is a qualitative study carried out in the case study, with the objective of identifying and describing the impacts and legacies of attending fire victims at the Kiss nightclub for the management of resources of the Hospital de Clínicas de Porto Alegre. **Method:** the data collection was developed in interviews and consultation of documents. Seventeen professionals involved in the management of care participated in the study. **Results and discussion:** the data were analyzed through content analysis of the thematic type. Impacts on human resources management were identified, with recruitment, training; in the management of material resources with the increase of non-standard inputs and materials; in the management of physical resources with the provision of beds and space for the reception of family members. Among the legacies, an Plano Institucional de Apoio a Catástrofes Externas was developed. **Conclusion:** the results confirm the evidence that the learning about risk management happens from events experienced by health institutions, whose legacy is reflected in the qualification of the planning and disaster response. The impacts and legacies identified constitute subsidies for the qualification of hospital care in disasters. **Keywords:** Disasters; Disaster's Administration; Impacts on Health; Health Evaluation; Hospital Administration.

RESUMO

Objetivo: o atendimento de vítimas de desastres estabelece o desafio, para as instituições hospitalares, do preparo para atender ao aumento da demanda, ao mesmo tempo em que os serviços essenciais precisam continuar em funcionamento. Foi realizada pesquisa qualitativa do tipo estudo de caso com o objetivo de identificar e descrever os impactos e legados do atendimento às vítimas do incêndio na Boate Kiss para a gestão de recursos do Hospital de Clínicas de Porto Alegre. **Método:** a coleta de dados foi desenvolvida em entrevistas e consulta a documentos. Participaram 17 profissionais envolvidos no gerenciamento do atendimento. **Resultados e discussão:** os dados foram analisados por meio de análise de conteúdo do tipo temático. Foram identificados impactos na gestão dos recursos humanos, com recrutamento, capacitações e treinamentos; na gestão de recursos materiais com o aumento de insumos e materiais não padronizados; na gestão de recursos físicos com o provimento de leitos e espaço para acolhimento dos familiares. Entre os legados, um Plano Institucional de Apoio a Catástrofes Externas foi desenvolvido. **Conclusão:** os resultados confirmam as evidências de que a aprendizagem sobre a gestão de risco acontece a partir de eventos vivenciados pelas instituições de saúde, cujo legado reflete-se na qualificação do planejamento e do atendimento em situação de desastres. Os impactos e legados identificados constituem subsídios para a qualificação do atendimento hospitalar em desastres.

Palavras-chave: Desastres; Administração de Desastres; Impactos na Saúde; Avaliação em Saúde; Administração Hospitalar.

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RESUMEN

Objetivo: para los hospitales, la atención de víctimas de desastres establece el desafío de prepararse para atender el aumento de demanda y que los servicios esenciales no dejen de funcionar. Se realizó una investigación cualitativa tipo estudio de caso con miras a identificar y describir los impactos y legados de la atención de las víctimas del incendio de la boíte Kiss en la gestión de recursos del Hospital de Clínicas de Porto Alegre. **Método:** la recogida de datos se efectuó en entrevistas y en documentos. Participaron diecisiete profesionales involucrados en gestión de la atención. **Resultados y discusión:** los datos se analizaron según su contenido temático. Se identificaron impactos en la gestión de recursos humanos, con reclutamiento, capacitaciones y entrenamientos; en la gestión de recursos materiales con aumento de insumos y material no estandarizado; en la gestión de recursos físicos proporcionando camas y espacio para recibir a los familiares. Entre los legados: se creó el Plan Institucional de Apoyo a Catástrofes Externas. **Conclusión:** los resultados confirman las evidencias que el aprendizaje en gestión de riesgos ocurre a través de eventos vividos por los hospitales y que su legado se refleja en el perfeccionamiento de la planificación y de la atención en casos de desastres. Los impactos identificados ayudan a mejorar la atención hospitalaria en casos de desastres.

Palabras clave: Desastres; Administración de Desastres; Impactos en la Salud; Evaluación en Salud; Administración Hospitalaria.

INTRODUCTION

In recent decades, the number of disaster records in different parts of the world has increased considerably, both in frequency and in severity and intensity, bringing countless casualties among the consequences.¹ One of the greatest impacts of this situation on today's society is facing the adversities caused by these disasters.

Health care facilities, especially the hospitals, are considered essential in these situations.² The victims care in different forms of manifestation establishes the challenge of the preparation to meet the increased demand especially for hospital institutions, at the same time that essential services must continue to operate.

The preparation for multi-victim events regardless of the cause is both necessary and beneficial for an institution and the region it assists. Proper preparation, including disaster planning and exercises, is crucial to addressing these situations. In the case of fires, multidisciplinary care specialized in burns, cooperation between hospitals and the government help reducing hospital mortality.

There is evidence that learning about risk management occurs from events experienced by health institutions, whose legacy is reflected in the qualification of disaster planning and care.^{3,4} The impacts of big events that remain in the long term are commonly classified as legacies, a term linked to an impact whose outcome remains for a long period (permanent character) and does not necessarily have a positive/beneficial aspect.^{5,6}

Brazil records about 200 thousand fires cataloged per year.⁷ In January 2013, the fire at the Kiss Nightclub located in the municipality of Santa Maria, in the state of Rio Grande do Sul, had 242 fatalities and 116 injured people. It was classified as the largest in the state and the fifth largest tragedy in the history of Brazil, with the highest number of deaths in the last 50 years and the third biggest disaster in nightclubs in the world. It was the third largest fire in the world's number of fatal and injured victims in a nightclub.

Eighteen of these victims were referred to the Hospital de Clínicas de Porto Alegre (HCPA).⁸ The option for this health institution was because of the strategic position of the university hospital as an integrated nucleus of the Sistema Único de Saúde (SUS) care network, besides having a wide range of assistance to health in the municipality and region, with vast coverage of hospital care, being a reference hospital in the state of Rio Grande do Sul.

The objective of this study was to identify and describe the impacts and legacies of care for fire victims at Kiss Nightclub, for the management of resources at the HCPA.

METHOD

A qualitative, case-study-based study was held.⁹ The study was performed at the HCPA and developed in two sequential stages: the interview and the consultation to the documentation used as sources of evidence.

The selection of the participants for the interview was intentional. The sample was composed of the snowball technique. Professionals working at the Comissão de Resposta em Emergências e Catastrofes (CREC) of the HCPA were invited to participate. The inclusion criteria were the involvement in the management of the disaster situation experienced in the hospital and the working time of at least 18 months. From the interview, they were asked to indicate other professionals who met the inclusion criteria.

The semi-structured interviews were carried out from August to November 2014, with the following questions: What was your role in providing care to the victims of the fire in Santa Maria? At that moment, what were the necessary steps in the institution to provide care for the victims? What documents can be consulted to verify these steps?

The documents consulted were indicated by the professionals interviewed who fulfilled the criterion of having been prepared or having undergone modification after the pre-established date on January 27, 2013. The Plano Institucional de Apoio Externo a Catástrofes Externas was approved on September 5 of 2014.¹⁰ Special Plan for Contingency for Disasters – World Cup, approved on June 11, 2014, and the editing of the Open Space entitled "Clinics mobi-

lized to assist the victims of *Santa Maria*” with the issue of March/April 2013 was consulted.⁸

The data were analyzed through thematic content analysis from Minayo’s perspective.¹¹ This study was approved by the *Comitê de Ética em Pesquisa* of the HCPA under the CAAE Protocol: 30346814.2.0000.5327. Participants signed an informed consent term and, for consultation of the documents, a term of commitment for the use of institutional data was used.

RESULTS AND DISCUSSION

CHARACTERIZATION OF THE PARTICIPANTS

Seventeen professionals participated in the study: nine nurses, two administrators, two doctors (two), one occupational safety engineer, one psychologist, one social worker and ten public relationships agent with post-graduation/MBA, five with master’s degree, one with a doctorate and one with a postdoctoral. The mean age was 45 years old, with a standard deviation of 8.1. The bond with the hospital was more than 10 years for 11 professionals.

IMPACTS AND LEGACIES IN HUMAN RESOURCES MANAGEMENT

The need to provide health care for many severely injured victims and their families has had a significant impact on local and state health systems. Many professionals were recruited in *Santa Maria* and in the country for the care. The high number of victims with extensive burns was a major challenge for health professionals working in intensive care units in the state.⁸

In human resource management, the sudden increase in demand has had an impact on multi-professional teams, with the need for management strategies and capacity building. The legacies were evidenced in the Contingency Plan and teamwork (Table 1).

Among the different areas in which the hospital operates, the clinical care was the one that suffered the most, since it is the one that provides daily care to patients.

First, we needed to structure the service, so first, it was needed people to work, to set up the team (E12).

In this case, there was great commotion because of individual and family factors, kind of disaster and factors of the workplace. At the same time, due to their proportion, national mobilization occurred and this situation was reflected in the health professionals who volunteered to work.

Table 1 - Impacts and legacies for the management of human resources for the care of the victims of the *Santa Maria* disaster at the *Hospital de Clínicas, Porto Alegre*, 2014

Human Resources	
Impacts	Legacies
Increased demand for care for victims and relatives Multi-professional care teams To provide large numbers and several professionals <u>Strategies:</u> Equipment of notice Overtime payment Organization of scales Resizing staff Volunteers <u>Intercurrence</u> Young patients	<i>Plano Institucional de Apoio Externo a Catástrofes Externas</i> Norms in the management of human resources Creation of a crisis office HR Involvement Relationship of the administrative coordination and the distribution of beds and discharge Organization of access to human resources
Training Profile of these patients (burned) The hospital is not a reference Need for training New demand for care Use of new technologies <u>Strategies:</u> External training of the institution Visits to reference centers Contact with medical specialists Systematic meetings Videoconferences	Teamwork Team spirit and solidarity Maturity of the team of professionals Learning from experience Future preparation worldwide Culture development for prevention and preparation

At five o'clock in the afternoon, the first patients began to arrive, and it was horrible... those girls who were at a party and soon they were naked, covered with sheets in an ICU, without a name! (E3).

[...] most people were willing to go there to help; then we organized our team to go there, we organized the team here to receive people, take the materials [...] (E9).

In general, health professionals are willing to participate in disaster care at their places of work.¹² Volunteering is a practice that has been described for emergency professionals.^{13,14} Nurses in different contexts, upon receiving notification of a potential impact on emergency services, make a conscious decision to participate in the response and continue to serve the victims.¹⁵

In the Nursing staff’s attendance, even with this adequacy, there was medical withdrawal due to the demand for care and the way in which the severity of the cases impacted the health of the worker.

There was an overload of jobs for people, people got tired, we had two nurses who went on leave, but more on the emotional side, you know (E11).

In sectors such as the ICU, high emotional demands are invested due to the severity of the patients or the risk of complications during procedures, and to the complexity of the tasks and the need to obtain results in a short term.¹⁶ This situation has been related to evidence that there is a high incidence of posttraumatic stress among emergency nurses.^{17,18}

The experience was the basis for the construction of an *Plano Institucional de Apoio Externo a Catástrofes Externas*, which, in the area of human resources management, the need to create a crisis office (or crisis unit), with the description and flow chart and coordination is included among the various regulations.

All people know this, they know this responsibility, and then it goes to this crisis cell, and within the crisis cell, there are all the entities that we think are important. The official thing, you know, then, this legacy remained, the organization of it all appeared from this need (E3).

The teamwork considered as an impact was based on what was published in the edition of *Espaço Aberto*, about the group work carried out at the Intensive Care Center, considered fundamental for success in the care of the victims, and the dedication of the professionals considered one of the factors of the good results achieved.⁸ Teamwork in the response to disasters has been evidenced in terms of the Nursing staff¹⁶ of all the emergency staff, including the pre-hospital service and other services.^{19,20}

Another perspective of legacy evidenced in the statements was the learning and the experience in the situation lived, besides a sense of preparation for what is happening at the world level, but that can reach the hospital. Professionals with wide experience in the area provided advisory in person or at distance. These sessions were organized by a network of university hospitals in collaboration with scientific societies and with the participation of professionals from all over the world. This process contributed to the provision of the best treatment for the victims.⁸

He left a legacy, he became aware of several levels of people who were laymen... an epidemic has arisen, now the cases have started to appear there, in Africa, the viruses, the Ebola, the staff: the material that I have to buy [...] things can happen (E1).

It's cultural, right, we prepare for a catastrophe [...] We did not imagine it, well... inside a hospital, it was the time to be prepared for a big event, but everything had been an informal way (E1).

The need to develop a culture for disaster prevention is internationally recognized through surveillance, risk assessment, educational and multi-sector measures that require invest-

ment and must be promoted at all levels. The cultural question was also addressed in the statements, because "it is perceived, by a set of factors, that Brazil does not have a risk culture and does not develop risk management, but crisis management".²¹

⁸ These results show that it is necessary to discuss the risks of land management in Brazil, especially in health institutions.

IMPACTS AND LEGACIES FOR THE MANAGEMENT OF MATERIAL RESOURCES

In a disaster situation, the increase in the demand for care increases the consumption of materials and inputs. The requirement to mobilize and organize these resources for care beyond normal capacity requires adequate management of material resources. The impacts attributed to the care of the victims of the disaster were later identified in the legacies for the health institution (Table 2).

Table 2 - Impacts and legacies for the management of material resources for the care of the victims of the *Santa Maria* disaster in the *Hospital de Clínicas*, Porto Alegre, 2014

Material Resources	
Impacts	Legacies
Increased consumption of inputs, materials, and medicines	<i>Plano Institucional de Apoio Externo a Catástrofes Externas</i> – Crisis cell Coordination supplies (Management of material resources – medicines, materials, and equipment)
Specific respiratory ventilator materials, trays for placement of chest drainage and catheters.	
Increase of personal protective equipment (PPE)	
Purchase of these materials and the institution be public, these bids were carried out in an emergency center, according to the statements. The high cost of these inputs	<i>Plano Institucional de Apoio Externo a Catástrofes Externas</i> – Administrative coordination – Identification of patients (detailed flow of how patients will be identified)
Patient identification – hospital did not have an adequate flow or system for identifying undocumented patients	
Equipment without proper control	<i>Plano Institucional de Apoio Externo a Catástrofes Externas</i> – coordination of supplies: the responsibility to provide and make available in the areas of pharmacy, warehouse, and clinical engineering, to act in the release and control of materials, medicines and equipment and provide the replacement or acquisition, as a matter of urgency, of the necessary inputs. Creation of a form to assist in controlling wealth
Medical supplies for external service (aircraft and donation of materials to use them by the university hospital)	

Continue...

... continuation

Table 2 - Impacts and legacies for the management of material resources for the care of the victims of the Santa Maria disaster in the Hospital de Clínicas, Porto Alegre, 2014

Material Resources	
Impacts	Legacies
Materials not standardized in the institution (special dressings, burn materials, extracorporeal membrane oxygenation – ECMO, electrocautery, and materials for performing vasectomies)	Incorporation of new technologies (standardization of ECMO system use and special dressings)

The HCPA is a large public hospital that provides a large quantity and diversity of materials.

[...]we have conditions, the hospital has many [...] a very good infrastructure, the material, there was no lack of material [...] it was just the question of being able to organize, there was a respirator[...] then this matter of infrastructure material it was quite like that (E3).

The impact of the demand generated by the number of victims caused the professionals to mobilize to locate materials and equipment in the institution for their use.

[...] because most of them arrived with pneumothorax, and there was a lack of chest drain trays. Then, I remembered that I had just bought, because many special materials I buy them [...] I had some stored here, it was also what saved it, because if we did not have more material, I would have to keep calling all the units (E4).

The cost of care for disaster victims is a concern of health service systems. Public expenditures of the health sector in Brazil include by the *Sistema Único de Saúde* (SUS). Studies have evaluated the financial impact of disaster response²² to provide subsidies for meeting this need.

Thus, as the patients were admitted to the hospital, there was a need for non-standardized materials at the institution, that is, they were not part of the list of materials used routinely.

Then, there was also a quick action to define what kind of products we would use, for example, some dressings that we did not have. So they were acquired and we started to make the management of these materials that would be used here [...] Buy them with an emergency (E7).

Due to the immediate need to purchase these materials and the institution is public, bids were made. Institutional support was essential in all phases of the organization and maintenance

during the stay of these patients in the hospital, because it involved high costs.

[...] the administration also assumed the acquisition of these materials, they were very expensive materials, we had a very high cost with these patients, but they were always promptly authorized and attended to most quickly (E7).

Patrimonial control is a way in which organizations manage all movable and immovable property, and these assets are used by organizations looking for objectives linked to public policies in force, ultimately, in the execution of public services.²³ The care of these victims has generated a movement of the material inside the hospital, having many equipment available without the proper control.

[...] equipment was leaving, to be taken to Santa Maria, ours, borrowed, and here we did not have good control of it. Also, in that anxiety, in that helping situation, it goes, it goes, they pick up the equipment and go (E6).

Due to the intention to help at the critical moment, the donation of materials ended up happening in an uncontrolled way. Thus, after the event, there was a construction of a form for the effective control of materials and equipment, the identification of the patients was standardized in the *Plano Institucional de Apoio Externo a Catástrofes Externas*.¹⁰

This helping mobilization involved the society that mobilized to contribute resources: [...] then we received donations from all over the country (E12).

A study about the preparation of pharmaceutical assistance in five Brazilian municipalities affected by disasters showed that in the precipitation of events, the municipalities received donations that were often not asked, either from society, from institutions or from federal and state governments. However, in only one municipality surveyed, there was a donation protocol.²⁴

The incorporation of new technologies based on the standardization of the use of the ECMO system and special dressings contributed to improving the quality and efficiency of this public health service. Health technologies can be considered the practical application of knowledge, including machines, clinical and surgical procedures, medicines, programs and systems to provide health care.

The use of these technologies was essential during the care of the victims, such as the use of the extracorporeal membrane oxygenation system and the special dressings that are essential for the treatment of burned skin lesions.

The dressings[...] because today, as we do not have many burn people, right, we do not use them, but it was very interesting, we learned a lot at the time and we are still attending all the patients (E5).

With this, the main legacies were identified in the *Plano Institucional de Apoio Externo a Catástrofes Externas* and also the new technologies.

MANAGEMENT OF PHYSICAL RESOURCES: THE CHALLENGE OF PROVIDING BEDS

The management of physical resources faced the challenge of providing the release of hospital beds, since the hospital is a public health reference, having a high demand for care, being always full. The development of this service demanded that spaces were also created for the family and activated the areas of support, Social Service and Psychology.

The main physical resources needed for the care of the victims were the hospital beds and the provision of space for the reception of the family members (Table 3).

Table 3 - Impacts and legacies for the management of physical resources for the care of the victims of the *Santa Maria* disaster in the *Hospital de Clínicas, Porto Alegre, 2014*

Physical Resources	
Impacts	Legacies
Hospital beds: Emergency Intensive Care Center (ICU)	<i>Plano Institucional de Apoio Externo a Catástrofes Externas</i> : specific instructions, expected to assist 15 serious patients from the emergency Coordination, such as those of catastrophe (CREC), Internal Nucleus of Regulation of Beds, ICU, Emergency, Infirmary, BC, and Distribution of Beds and Assistance Screening for possible transfers to beds in hospitalization unit Suspension of elective surgeries
A place to accommodate the families of these victims	<i>Plano Institucional de Apoio Externo a Catástrofes Externas</i> : coordination of care to family members clarified that the reception of family members will be done by Social Work and Psychology, centralized in a specific place

Hospital planning for bed release was triggered rapidly and measures such as the restriction of emergency care were adopted at both the emergency and the Intensive Care Center (ICU).⁹ The role played by managers was fundamental, as they used strategies to accelerate discharge.

We organized the logistics, in fact, of their arrival here in the hospital, from checking with the IU teams how we could do to remove as soon as possible the patients who were able to leave the floors, to vacate the ICU, we mediate with the emergency team (E15).

Among the measures adopted, the screening for possible transfers to beds in the hospitalization unit, transfer of patients to the cardiac care unit and some flows were reversed.

[...] contrary flows that had to be determined, you know, patients, for example, going back to the recovery room, to the ICU of the ER, to release here [...]. (E4).

However, as the hospital was organized to receive the patients, the strategy used by the professionals was modified to reduce the number of cardiac surgeries and to suspend elective surgeries, as well as to maximize the increases in ICU.⁹

[...] we made a combination of reducing the number of heart surgeries we had. So we canceled the surgeries, only emergency surgery was released, obviously (E12).

The cancellation of surgeries is a strategy adopted in these cases and was foreseen by the Hospitals that would host the World Cup, in the contingency plans for the capacity to respond in the event of disaster.²⁷

Another demand for care related to the management of physical resources was to organize a place to accommodate the relatives of these victims since many of them were from the interior of the state. One solution found was the use of the HCPA amphitheater as a support structure.

[...] the second step was to set up a support structure for the families that were arriving. So we set up in the auditorium, in Albuquerque, with the social work group, Psychology, to host the families, and that lasted more than a month (E16).

Thus, on the arrival at the HCPA, the victims were referred to the emergency room and later to the ICU, and their relatives to the amphitheater of the hospital, where a host structure was set up with support from the Social Work and Psychology.⁸

CONCLUSIONS

The measures to be taken in the care of the victims were incorporated into specific actions of strategic reach, being an important element of the assistance network for disaster care,

which is the hospital. Thus, the hospital had an impact on the management of material and physical resources, and they were maintained later, confirming the assumption that participation in disaster care promotes the qualification of health institutions to mitigate and/or respond to the demand generated by them.

Although this case study is from a school hospital, it has the potential to contribute to hospital institutions in general in preparation for care in disaster situations. The impacts and legacies of having been identified in a university hospital, of international reference, could be a basic theoretical reference for the construction of theoretical models to support future evaluations of the preparation and capacity of hospital institutions for the care of victims of disasters.

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