Original Article

Visibility of intrahospital transport in an intensive care unit: a descriptive study

Visibilidade do transporte intra-hospitalar em unidade de terapia intensiva: estudo descritivo

Visibilidad del transporte intrahospitalario en unidad de terapia intensiva: estudio descriptivo

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ABSTRACT

Objective: To verify the perception of the nursing staff about patient´s safety during the intrahospital transport of patients in an intensive care unit.

Method: Qualitative, descriptive study with the participation of 21 nursing professionals who worked at the intensive care unit of a public hospital in the southern region of Brazil. The data were collected using semi-structured interviews, in November 2012, and analysed using Minayo's content analysis.

Results: The results led to three main categories: responsibility of the health professional in intra-hospital transport; risk situation for the patient in intra-hospital transport; quality in the structure for intra-hospital transport, revealing the concern of professionals in providing safe transport.

Conclusion: Although the nursing professionals are aware of the patient safety during intra-hospital transport, there is a need for institutional protocols and training on this practice to reduce the incidence of adverse events.

Keywords: Transport of patients. Intensive care units. Nursing.

RESUMO

Objetivo: Verificar a percepção dos profissionais de enfermagem sobre a segurança do paciente durante o transporte intra-hospitalar do paciente internado em unidade de terapia intensiva.

Método: Estudo descritivo, qualitativo, com participação de 21 profissionais de enfermagem que atuavam em unidade de terapia intensiva de um hospital público na região sul do Brasil. Os dados foram obtidos por meio de entrevistas semiestruturadas em novembro de 2012 e analisados através da análise de conteúdo de Minayo.

Resultados: Foram evidenciadas três categorias: responsabilidade do profissional de saúde no transporte intra-hospitalar; situação de risco para o paciente no transporte intra-hospitalar; qualidade em estrutura para o transporte intra-hospitalar, revelando preocupação dos profissionais em realizar um transporte seguro.

Conclusão: Os profissionais de enfermagem têm conhecimento sobre a segurança do paciente durante o transporte intra-hospitalar, porém, há a necessidade de protocolos institucionais e de capacitações para o manejo desta prática, com a finalidade de reduzir ocorrências de eventos adversos.

Palavras-chave: Transporte de pacientes. Unidades de terapia intensiva. Enfermagem.

RESUMEN

Objetivo: Verificar la percepción de los profesionales de enfermería sobre la seguridad del paciente internado en unidad de terapia intensiva durante el transporte intrahospitalario.

Método: Estudio descriptivo, cualitativo, con participación de 21 profesionales de enfermería que actuaban en unidad de terapia intensiva de un hospital público en la región sur de Brasil. Los datos fueron obtenidos por medio de entrevistas semiestructuradas en noviembre de 2012 y analizados a través del análisis de contenido de Minayo.

Resultados: Fueron evidenciadas tres categorías: responsabilidad del profesional de salud en el transporte intrahospitalario; situación de riesgo para el paciente en el transporte intrahospitalario; calidad en estructura para el transporte intrahospitalario, revelando la preocupación de los profesionales en realizar un transporte seguro.

Conclusión: Los profesionales de enfermería tienen conocimiento sobre la seguridad del paciente durante el transporte intrahospitalario, pero son necesarios protocolos institucionales y capacitaciones para el manejo de esta práctica con la finalidad de reducir ocurrencias de eventos adversos.

Palabras clave: Transporte de pacientes. Unidades de terapia intensiva. Enfermería.

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INTRODUCTION

The intensive care unit (ICU) is a sector of high complexity with modern techniques and equipment that allow the provision of specialised and individualised care to patients in critical condition[1].

Some diseases require interventions and diagnostic clarification for treatment, which cannot be performed at the bedside and demand intra-hospital transport (IHT). In this regard, the additional care demanded during IHT is a challenge for healthcare professionals and often requires the use of technologies not available in the ICU, as well as decisions supported by the assessment of facilities and risks[2].

The organisational environment, the misuse or lack of technology used for IHT as regards apparatus (continuous infusion pumps, transport gurney, monitors and devices to control vital signs and blood gases), and the lack of communication between the professionals can lead to the occurrence of errors and incidents, resulting in adverse events that aggravate the clinical status of the transported patient[3-4].

A study that investigated the incidence of adverse events in 441 IHT patients admitted to an ICU and referred for diagnostic tests or therapeutic procedures identified the occurrence of 79.8% complications, among which 7.9% were equipment and team related and 79.4% were patient related[5]. In another study that sought to identify adverse events and determine the risk factors during 262 IHT with critically ill patients identified 45.8% of adverse events. Of these events, 26% were related to the patient. There was a predominant reduction in saturation of 8.8% and 5% in hemodynamic instability[6].

These findings reveal the importance of assessing the clinical conditions of patients and any available equipment prior to IHT, and of planning IHT correctly by providing a qualified team and equipment that ensure patient safety. Moreover, this assessment reduces the possibility of errors, incidents, and adverse events during IHT[7].

At the hospital in southern Brazil where this study was conducted and where there are at least two professionals to accompany IHT, the supplies and equipment to monitor the IHT are not always in appropriate operating condition, the professionals lack training, and the stages of IHT lack a standard procedure. This situation is aggravated by the fact that studies target the risk factors related to IHT and give less importance to the role of health workers during this process[5-6].

In this context, the research question is: what is the perception of nursing workers on patient safety during the intra-hospital transport of a patient in an intensive care unit? The aim was to verify the perception of nursing workers on patient safety during intra-hospital transport of a patient in intensive care.

METHODOLOGY

This is a descriptive, qualitative study approved by the human research ethics committee under opinion No.154.984 and Certificate of Presentation for Ethical Appreciation 07422012.1.00000121. Research was conducted at a large public institution that attends users of the Unified Health System (SUS) in southern Brazil. We interviewed 21 nursing workers, of which five were nurses, 13 were nursing technicians, one was a nursing assistant, and two were nursing residents, at a general ICU. The sampling plan was by convenience according to the following criteria for selection: working at the intensive care for at least six months, participated in at least one IHT, available for an interview. Workers who were away from work for any reason during data collection were excluded.

Data were collected using semi-structured interview with a script, in November 2012, conducted by the researchers, and concluded with data saturation. The interviews were individual at the ICU on a previously scheduled time and date, according to the availability of each participants. The questions addressed the occurrence of incidents and adverse events during IHT; benefits and difficulties of IHT; coping with an incident during IHT; and professional conduct during IHT. The interviews were recorded and transcribed. Each participant read the interview transcript and validated its content. Data were subjected to Minayo's content analysis[8] according to the following steps: pre-analysis (review of the objective and creation of indicators to guide final interpretation); exploration of the material (with encoding of text in log units, followed the selection of counting rules with the sorting and aggregation of data to form categories); and results processing and interpretation (interpretation of data already categorised in accordance with the theoretical basis). Each participant signed an informed consent statement. Their anonymity was guaranteed by using acronyms according to their position (N = nurse, NT = nursing technician, NA = nursing assistant, res = resident) followed by a sequential number (N1, NT 1, NA1, RES1).

RESULTS AND DISCUSSION

Among the 21 participants of the study, five were nurses, 13 were nursing technicians, one was a nursing assis-

tant, and two were nursing residents. In terms of age, 13 were between 31 to 40 years, six between 21 to 30 years, and two between 51 to 60 years. Most of the respondents were women. With regard to background, eight had been working in their profession between 11 and 15 years, three between 6 and 10 years, three between 16 and 20 years, one for less than a year, two between 1 and 5 years, and two for more than 25 years. Most of the participants had a graduate degree. All participants had already transported at least one critically ill patient. Data analysis and interpretation led to the creation of three categories: responsibility of the health professional in intra-hospital transport; risk situation for the patient in intra-hospital transport; and quality in the structure for intra-hospital transport.

Responsibility of the health professional in intra-hospital transport

The responsibility of health workers in IHT targets the prevention of incidents and adverse events. The interviewed professionals share experiences and scientific expertise to prevent incidents and adverse events, which shows their concern for safety from patient departure to the patient's return to the sector.

> *[...] It is something we do regularly. The transport of patients for tests is daily. There is extra concern not only of the nursing staff, but always of the transport. You see, the nurse goes, the technician, the physical therapist, and physician because it´s something that really mobilises the team [...]. (RES1)*

> *You can't say the transport is perfectly safe, but you can't say that we don´t do it safely, either. It is safe in terms of having a committed, able team. We have the right supplies for transport, we make the contacts beforehand so the patient doesn't have to wait for a long time, and that generates safety [...]. (N2)*

> *I think there is a concern and a whole team is involved. The physician goes, the physical therapists, a technician, and a nurse accompanying that patient. During transportation, we check saturation, pulse. [...]. During the trip I think it's more critical, creates more tension. (NT4)*

> *There's concern in relation to safety. The falls, the respiratory part, the actual care during transport. Depending on the patient, a physician is present, a nurse, and a technician. We always take the transport bag with medication and equipment in case we need to something extra [...]. (NT10)*

According to the results of this study, all the stages of IHT (preparation during and after transport) are perceived as potential risks since removing patients from the ICU to run tests or procedures exposes them to potential instabilities, possibly resulting in unexpected complications and immediate intervention. All the members of the team must be familiar with each stage of IHT to perform their individual tasks correctly.

Each critically ill patient must be transported with the continued monitoring of at least one physician and one nurse with the skills to provide urgent or emergency assistance[9]. This number of professionals, however, can increase depending on the prior assessment of the patient who will be transported[10]. It should be noted that the team of professionals who will perform the IHT must be coordinated and each member must have defined roles and responsibilities to ensure the group is prepared in case of complications.

In addition to the nursing staff, the physical therapist and the physician, material resources are considered crucial in case of instabilities[6]. Therefore, IHT must be structured with correct planning, a team qualified in critical care, and equipment to monitor and support the patient during transport. These precautions will evidently reduce the probability of faults or complications during transport.

A patient evaluation that observes hemodynamic stability and weighs the risks and benefits helps the team make the right decisions and reduces the possibility of incidents during the trip[7]. In this regard, each professional has the responsibility to ensure safe care and all the workers involved in IHT must be trained to manage any technical, clinical or structural incidents and adverse events during IHT[10-11].

The participants stress patient safety in IHT and demonstrate some knowledge even without the institutional protocols that guide this practice.

Risk situation for the patient in intra-hospital transport

IHT is presented as a high-risk procedure that favours the occurrence of incidents and adverse events due to equipment failure, faults of the team, and physiological changes that can affect the clinical condition of the patient[12-13].

> *The biggest complication here happens when the oxygen finishes. If the oxygen runs out, we professionals really have our hands tied. I wasn't doing the transport, but it happened in my shift, the lift got stuck and the patient ran out of oxygen because the procedure took a while. [...] (N2)*

[...] When we changed the respirator still inside the box, the respirator was not cycling well, so we had to go back to the respirator in the box to adjust the other one. But it wasn't during transport, it was on the move, but it was in preparation, in the organisation of the patient. (NT3)

The statements depict undesirable events for patients caused by incidents during IHT, regardless of the situation that generated the event (the patient's clinical condition; problems with equipment or with the team; and/or organizational issues), revealing that the severity of complications in IHT can worsen the clinical condition of patients.

The most common equipment failures are related to the battery of the transport respirator, the portable pulse oximeter, the continuous infusion pump, and the interrupted supply of oxygen. The team-related faults involve the loss or traction of devices and communication problems between the teams, leading to greater patient exposure primarily for being outside the sector of origin. Thus, proper planning during the patient preparation stage and effective communication between the sectors is essential to reduce the time of procedures and IHT[4,14].

[...] The patient was critical and really needed a cat scan and coming out of the lift, in the corridor the patient evolved to cardiac arrest [...], the team did CPR and we went back, not to the ICU, but to the emergency room that was closer to provide better support to the patient [...] and when he was well stabilised, he returned to the ICU, we didn't expect him to stop there, but he was a critically ill patient. (NT2)

Today was an example, actually. The saturation began to drop, they had to remove the respirator and bag the patient. There's been a drop in saturation and it has happened several times. I remember a case of getting to the lift and saturation dropping and having to return the patient to the ICU. [...] (NT8)

The most feared and frequently mentioned alterations are physiological, such as respiratory and cardiocirculatory changes, due to their impact on the clinical condition of patient, and considering that changes to vital signs can indicate an organic dysfunction. IHT, until the return of the patient, requires the same rigorous and continuous monitoring of physiological functions as the monitoring provided at the ICU[11].

In the present study, the nursing professionals showed they had experience with the adverse events during IHT, and reported risk situations and the actions taken. They stated problems linked to the patient's condition, equipment, and organizational/structural issues. These problems are also presented in a study involving 184 IHT. In this case, 44.5% were patient-related and involved a drop in saturation, agitation, and hemodynamic instability, while 39.6% were related to equipment/team[15].

The reduction of incidents and adverse events is therefore considered a constant challenge. Assessments before and after transport and careful planning with regard to patient conditions, the accompanying team, and the equipment are essential to guarantee patient monitoring and support during IHT. The team must be prepared to act in emergencies and to provide all the supplies and accessories needed to intervene in adverse events during IHT. A determining factor for the success of the IHT is the training of the team involved in this form of care[7].

Quality in the structure for intra-hospital transport

In the daily care routine, the provided care is not always entirely safe due to the patient's condition, service organisation, or inadequate infrastructure conditions. In IHT, the organisational aspects and, especially, the structural aspects are also related to the occurrence of incidents and adverse events.

What perhaps makes it unsafe to ensure patient safety during the IHT is the environment itself. We have an irregular floor, we have a bad lift at the hospital. I believe that the structural issue still have to improve. Bad elevators that don't work, uneven floor. Our gurney is not appropriate, it does not have the right serum support. This week we took a patient for testing and he complained that the gurney bumped into an uneven surface in the lift, and gurney shook, and the patient felt pain. (N1)

The physical structure interferes, I think. Sometimes difficult places to pass with the bed, the gurneys are sometimes too heavy and they compromise patient safety. (NT3)

[...] The lift is very small, sometimes it does not work, the location for tests is too far, the distance of the surgical centre is also too long. Here everything is far from the ICU [...]. (N T5)

A study with 459 IHT showed that 9.4% of adverse events were patient related, 1.1% was related to organisational/structural aspects, and 0.8% was related to equipment. The study also highlights communication problems as one of the main triggering factors of adverse events[16].

When transporting a patient from the source sector to another, the destination may not be prepared to receive a critically ill patient and thus generate a potential risk. Consequently, communication between teams can prevent the occurrence of incidents and adverse events in these situations, as well as reduce waiting and transportation time[16].

These precautions must always be present in all sectors to prevent unnecessary waiting, and the receiving team must be aware of the patient's clinical conditions and prepare the location for arrival.

Thus, it was observed that the organisation and structure of a service could affect and compromise the obtainment of desirable results. The participation of managers and the professionals who directly provide care is essential for the creation of strategies that lead to better results. The work environment has a strong influence on the care practice and, consequently, on the safety of patients[17].

The physical structure of the studied hospital creates some problems during the transportation of patients for testing and procedures. The professionals mentioned that the rooms are small and offered little room to manoeuvre from the bed to the gurney, generating additional risk. They also mentioned lifts that jam between floors, outdated equipment, and the long distances between sectors. These statements show that the structural characteristics, including the physical plant and the institutional resources, pose a risk to patients.

Considering the statements of the participants, protecting patients from incidents and adverse events must be the responsibility of all the professionals involved directly or indirectly with this activities, and can be ensured by creating service flows and providing team training[11].

FINAL CONSIDERATIONS

This paper originated from the master's thesis entitled, *Incidentes e eventos adversos relacionados ao transporte intra-hospitalar de pacientes internados em unidade de terapia intensiva, Universidade Federal de Santa Catarina, Florianópolis, Santa Catarina, Brasil*[18].

It was observed that the ICU nursing staff of the studied hospital perceives the risks and possible complications to which the patients are exposed. The statements obtained in this study converge with the findings cited in literature. These are situations in which IHT-related risk and the lack of planning and attention at any of the stages of IHT can result in incidents and adverse events. The presence of the full team, the creation of institutional protocols related to each stage of transport, and professional training can lead to a safer practice. The limitations of this study are the small number of participants and the fact that research was only conducted at a single ICU in the public hospital.

Conducting research at a single institution may not express the reality of other services. The results can serve as support for other healthcare institutions and assist in the preparation of institutional protocols, training programmes, and other strategies that help prevent adverse events and improve the quality of care.

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