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# Preparation of nurses to meet multiple victims in air rescue

**ABSTRACT** | Objective: To characterize the role of the nurse on board, with an emphasis on attending to multiple wounds. Methodology: Exploratory and qualitative study. Data were obtained through semi-structured, scientific questionnaires on board nurses in Belo Horizonte / MG. The Snowball methodological technique was used and analyzed under the content of Laurence Bardin. Result: Of the nurses working in the air rescue, who agreed to participate: the majority are male, have an average family income of nine relative, more than one job, average experience of six years. From the analysis of the data, according to the categories listed were: Systematized Service and Aeromedical Training. Conclusion: It is necessary to recognize the role of the nurse in the care aswounds in the aeromedical rescue. It is worth emphasizing the importance of training to achieve excellence in a confined hostile environment.

**Keywords:** Nurses; Incidents With Mass Injuries; Rescue Work; Aerial Rescue; Knowledge Management.

**RESUMEN** | Objetivo: Caracterizar el rol de la enfermera a bordo, con énfasis en la atención de múltiples heridas. Metodología: Estudio exploratorio y cualitativo. Los datos se obtuvieron a través de cuestionarios científicos semiestructurados a bordo de enfermeras en Belo Horizonte / MG. Se utilizó y analizó la técnica metodológica Snowball bajo el contenido de Laurence Bardin. Resultado: De los enfermeros que laboran en el rescate aéreo, que aceptaron participar: la mayoría son hombres, tienen un ingreso familiar promedio de nueve parientes, más de un trabajo, experiencia promedio de seis años. Del análisis de los datos, según las categorías enumeradas fueron: Servicio Sistemizado y Formación Aeromédica. Conclusión: Es necesario reconocer el papel del enfermero en el cuidado comoheridas en el rescate aeromédico. Vale la pena enfatizar la importancia de la capacitación para lograr la excelencia en un ambiente hostil confinado.

**Palabras claves:** Enfermeros; Incidentes Con Lesiones Masivas; Labores De Rescate; Rescate Aéreo; Gestión Del Conocimiento.

**RESUMO** | Objetivo: Caracterizar a atuação do enfermeiro de bordo, com ênfase no atendimento à múltiplas vítimas. Metodologia: Estudo exploratório e qualitativo. Os dados foram obtidos por meio de questionários semiestructurados, aplicados nos enfermeiros debordo em Belo Horizonte/MG. Utilizada a técnica metodológica de Bola de Neve (Snowball Sampling) e analisesob o conteúdo de Laurence Bardin. Resultado: Dos enfermeiros atuantes no resgate aéreo, que aceitaram participar, a maioria são do sexo masculino, possuem a renda familiar média de nove salários mínimos, mais de um vínculo empregatício, experiência média de seis anos. A partir da análise dos dados, as categorias elencadas foram: Atendimento Sistemizado e Capacitação Aeromédica. Conclusão: É preciso reconhecer o papel do enfermeiro no atendimento as vítimas no resgate aeromédico. Vale ressaltar a importância da capacitação para alcançar a excelência, no ambiente hostil confinado.

**Palavras-chaves:** Enfermeiros; Incidentes Com Feridos Em Massa; Trabalho De Resgate; Resgate Aéreo; Gestão Do Conhecimento.

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## INTRODUCTION

The first report of successful air transport of patients took place in 1870, at the siege of Paris by Germans, in hot air balloons. There have been a series of events in the history of critical patient air transport worldwide. In this context, considering the aggravating factors in our country, such as: peak traffic hours, places of difficult access, shortage of ambulances, distance from hospitals and others, the aeromedical rescue composed of a doctor, nurse and pilot was instituted. <sup>(1)</sup>

In Minas Gerais (MG), the interdisciplinary team working in the Air Operations Battalion of the Military Fire Department (BOA - Batalhão de Operações Aéreas) is composed of military

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firefighters, with the most diverse functions. It has maintained a partnership with professionals from the Mobile Emergency Care Service (SAMU 192) for years, consisting of doctors and nurses, in assisting victims. <sup>(2)</sup>

In the State, the framework for the creation of a plan for emergency and urgent care services to disasters and catastrophes came about due to the need for a preventive program to attend two major events: Confederations Cup in 2013, Soccer World Cup in 2014 and the Olympics in 2016. <sup>(3)</sup>

Pre-hospital care (PHC) occurs unexpectedly in daily life and occurrences may consist of individual cases or incidents with multiple victims (IMV). <sup>(4)</sup> In an IMV, the care provided aims to serve the greatest number of victims, in the shortest time possible. For this, it is necessary to perform the screening through the Simple Triage and Rapid Treatment (START) method. <sup>(5)</sup>

Screening by the START method is used worldwide in situations of occurrences with multiple victims, it seeks to promote the initial treatment, with stabilization and transport to the reference through actions controlled through regulation and effective communication. In Brazil, the Ministry of Health recommends screening in cases of events with five victims or more. <sup>(5,6)</sup>

The Federal Council of Nursing (COFEN), through Law No. 5.905 of July 12th, 1973, through Resolution No. 379/2011, predisposes the presence of nursing in the APH against basic and advanced life support, provided by duly professionals qualified, guaranteed by the law of professional practice No. 7498/86. <sup>(7)</sup> Considering a historical line of the on-board nurse: Resolution No. 551, of July 12th, 2017, regulated the role of nurses in mobile and inter-hospital APH in air vehicles. <sup>(8)</sup> COFEN Resolution No. 660/2021, of March 3rd, 2021, amends COFEN Resolution No. 656, of December 17th, 2020, which regulated the role of nurses in direct care

and in the management of APH and Inter-hospital care in air vehicle. <sup>(9,10)</sup>

The nurse, faced with an IMV, has the attribution to assess the severity of injuries and apply maneuvers to maintain life, favoring increased survival. As well, it is able to provide quality care to the greatest number of victims possible. <sup>(8,11)</sup>

Given the above, this study aimed to describe aspects of the performance



This is an exploratory descriptive research, with a qualitative approach, through a semi-structured questionnaire on the role of the on-board nurse in caring for multiple victims in an air rescue service.



of onboard nurses, with an emphasis on attending to multiple victims.

## METHOD

### Type of study

This is an exploratory descriptive research, with a qualitative approach, through a semi-structured questionnaire on the role of the on-board nurse in caring for multiple victims in an air rescue service.

The exploratory research aims to provide a deeper understanding of the proposed problem in order to make it possible to understand it clearly. The qualitative approach adopts a subjective and empirical assessment, enabling the researcher, through the analysis of the interviews, to interact with the interviewee. Thus, the researcher intends to understand the aspirations, values, beliefs and attitudes of the interviewees. However, such aspects cannot be quantified. <sup>(12)</sup>

Respondents in the survey are nurses working in aeromedical rescue, from the public network, in the metropolitan region of Belo Horizonte/MG. The service has seven professionals, four of whom were interviewed and with this number it was possible to obtain data saturation. The subjects received the initial letter 'E' and the numbering in ascending order of the interviews, thus preserving the anonymity of their identities.

This study followed the guidelines expressed in Resolution MS 466/12 of the National Health Council, which presents the ethical standards for conducting research with human beings. <sup>(13)</sup> It was approved by the Ethics and Research Committee (CEP) of the Medical Sciences School of Minas Gerais (FCM-MG), under CAAE: 15734719.9.0000.5134. Data collection was carried out through a semi-structured questionnaire after being assessed by the CEP. A pilot test was carried out to verify the consistency of

the elaborated questionnaire, prior to its application. Those invited to participate in the research were included only after signing the Informed Consent Form (FICF).

After data collection, the information was tabulated and analyzed according to the content analysis technique developed by Laurence Bardin. The steps of the communication analysis technique aimed to obtain, through systematic procedures and objectives of description of the content of the messages, indicators (quantitative or not) that allow the inference of knowledge related to the conditions of production/reception of these messages. The analysis was carried out in three phases, described as: registration unit, context unit and meaning unit, as shown in Figure 1. <sup>(14)</sup>

## RESULTS AND DISCUSSION

Of the seven nurses working in aeromedical rescue, four nurses agreed to participate in the research (4/

57,1%). While, during data collection, one of the professionals was on vacation, another did not feel comfortable to participate and the last one was out of the state (3/ 42,9% or 14,3% of each of the three).

Among the professionals interviewed, most are male, have an average family income of nine minimum wages, more than one employment relationship, graduated for more than fifteen years and an average experience of six years in air rescue service (3/ 75% ). All respondents have a post-graduate degree and half have other levels of education such as master's, doctorate and/or MBA. Regarding marital status, half of the professionals are married. From the systematic reading of the interviews, two categories emerged: Systematized Service and Aeromedical Training.

### Systematized Service

The on-board nurse accumulates managerial and care functions. It is up to the professional to carry out the

planning during all stages of care (pre, trans and post) so that the Systematization of Nursing Care (SAE) is present throughout the entire process of aeromedical transport. <sup>(15)</sup>

Oliveira, et al. <sup>(16)</sup> in their study, they corroborate Scussiato, et al <sup>(15)</sup> describing the SAE as a methodology that organizes the entire nursing care process based on an outline guided by theoretical and philosophical bases.

In view of the responses obtained, we can evidence that the interviewees understood the managerial role of the flight nurse, in relation to the care provided in air transport, through the following sentences:

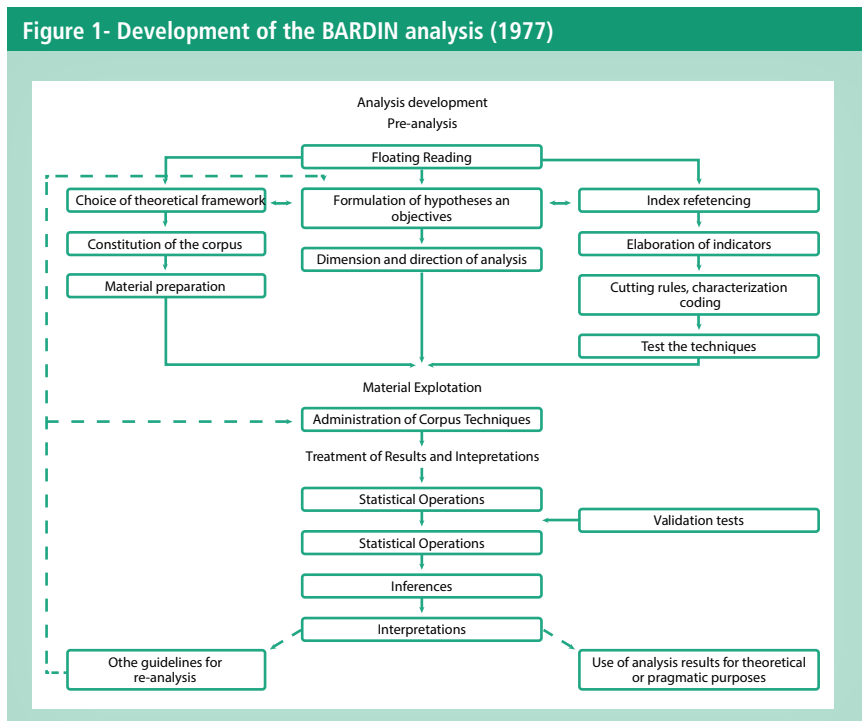
“First, the nurse has a fundamental role in the issue of managing care for multiple victims [...] they have to know what materials are available for care, the hospitals [...] that receive these patients and the very question of how he will screen these patients.” E2

“Well, the nurse is very important in the role of managing the resources we have, human resources, technical resources, material resources, provides and provides this material [...]” E3

The management provided by nurses in disaster situations is an important tool to minimize the occurrence of adverse events that may affect the team and victims present at the site. Through knowledge, nurses are able to manage and scale problems, in addition to promoting safety and an effective response. <sup>(17)</sup>

### Aeromedical Training

According to Salvador et al., <sup>(18)</sup> the IMV has specific situations. In this context, the qualification and training of professionals are essential, since the beginning of their aca-



Source: Prepared by the authors, 2020.

demical education. Qualified training can make nurses feel able to act, optimizing safety, resolvability and minimizing the incidence of possible adverse events during critically ill patient care.

The following reports portray the importance of theoretical and practical knowledge of nurses in the aeromedical service during victim care.

"[...] it is a very limited service, a service that is new to the system, requires the professional to have aerospace knowledge, professional experience in urgency and emergency or intensive care [...]" E2

"[...] it will require knowledge from you, it will require certain skills from you because it is a hostile environment [...]" E4

Therefore, professionals must be adequately prepared, trained and trained to provide the best service possible. What will ensure the development of relevant rescue techniques, organized, effective, safe and mitigating possible errors while acting in urgent and emergency situations.<sup>(19)</sup>

There are several particularities faced by air service health professionals, such as: limited space in the aircraft, the presence of noise, accelerations and decelerations of its vibrations, among others. All scores can generate physiological changes to different degrees in the crew.<sup>(20)</sup>

With regard to the limitations and specificities faced by the interviewed professionals, we can explain the following excerpts:

"[...] there is the issue of meteorological limitation, time limitation [...] and there is also the issue of space limitation, of conditions to carry out the intervention of the patient during transport [...]" E1

"Air transport has several specificities [...] the physical space, the conditions relating to changes in pressure, vibration, temperature [...] are different on land. So in air we have to have our own equipment [...]" E3

Physiological changes occur, both in patients and in the team, with the increase in the altitude of the aircraft; such as flight stress (vibration, humidity, noise, temperature) and aerodilation, resulting from constant pressurization changes inside the aircraft.<sup>(20,21,22,23)</sup> Thus, the authors, Scuiasiato et al.<sup>(15)</sup> reinforce the importance for the professional working in aeromedical transport, to master the inherent knowledge of their profession, as well as flight physiology.

In their study, Bonuzzi, et al.<sup>(21)</sup> address GM Ordinance 2048 of November 5, 2002, which institutes the qualification of aeromedical transport professionals and the creation of the Aerospace Nursing specialty, granted by COFEN through Resolution 260/2001. The authors point out that specific knowledge has benefits in the practice of on-board nurses with regard to victim care.

Respondents, when asked about the training carried out in air rescue, provided the following reports:

"[...] qualification trainings are carried out, the course is called ASA, and it qualifies physicians and nurses for aeromedical care, both in the aeronautics part and in the care part [...]" E1  
"Today we have the advanced aeromedical support course here in the Air Operations Battalion of the Fire Department and linked to the SAMU of Belo Horizonte, and there is flight safety, there is a course for the crew to work with aeromedical and there is a course on Assis-

tance to victim and in the aeromedical service." E2

Lamet al.<sup>(24)</sup> state that the planning, training and prior preparation of professionals in IMV maximize confidence, knowledge and clinical skills. Together, professional skill, to the detriment of the particularities of the aeromedical service, the need for a reduced response time in the care of trauma victims, the agility of the modal, the specificity of the environment and the definitive treatment in a shorter period.<sup>(25)</sup>

The Integrated Disaster Assistance Plan with Multiple Victims is activated when it comes to IMV assistance. This plan promotes an integrated response between the health and public safety service, with the aim of improving communication between the sectors involved in patient management in hospital networks.<sup>(3)</sup>

According to the interviewees' report, the simulations are necessary, together with all the sectors involved, in order to improve the care provided to multiple victims. This fact is explained in the following excerpt:

"I think one of the main weaknesses is the integration of different sectors because the care with multiple victims never serves only one agency, SAMU, fire and police, traffic service, civil defense, everyone together [...]" E3

Lima et al. corroborate, stating that education through realistic simulation helps in the development of technical, communication and teamwork skills. Still, the use of this tool, in controlled, contextualized environments, optimizes multidisciplinary care in the pre-hospital setting, especially in IMV.<sup>(19)</sup>

## CONCLUSION

O estudo possibilitou conhecer al-

gumas peculiaridades do enfermeiro no resgate aeromédico, a importância da sua capacitação profissional, da sistematização da assistência, além da percepção da otimização da qualidade assistencial.

As ações do enfermeiro de bordo abrangem diversos aspectos gerenciais, tais como: planejar escalas, realizar provisão e previsão de materiais e equipamentos, organizar o atendimento aos IMV, dentre outros. Assim como, as atividades assistenciais sistematizadas, proporcionando ao paciente uma

assistência segura e maior chance de sobrevivida.

É notório que o resgate aéreo traz desafios a todos os profissionais inseridos no atendimento às vítimas e questões associadas ao ambiente de trabalho. Assim como, é um meio de transporte eficiente e seguro, capaz de proporcionar assistência integral, eficaz e rápida às vítimas.

Diante do exposto, esse estudo traz uma reflexão acerca da importância da atuação do enfermeiro no atendimento à múltiplas vítimas no

resgate aeromédico, por permitir vislumbrar a importância das competências, das habilidades essenciais para a atuação em uma área de alta performance e que exige acurácia no conhecimento científico, alinhado ao ambiente de trabalho.

Assim, ressalta-se a importância da realização de novos estudos em todo território nacional. Que abarque a atuação do enfermeiro de bordo, sua relevância social e o investimento em políticas que possam proporcionar ao profissional uma maior visibilidade. 🐦

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