

Demographic mapping and characterization of physical therapy care profile offered in Neonatal Intensive Care Units in the City of Rio de Janeiro, Brazil

Mapeamento demográfico e caracterização do perfil de assistência fisioterapêutica oferecida nas unidades de terapia intensiva neonatais do Rio de Janeiro (RJ)

Mapeo demográfico y caracterización del perfil de asistencia fisioterapêutica ofrecida en unidades de cuidados intensivos neonatales de Río de Janeiro (RJ), Brasil

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ABSTRACT | This study aims to map and characterize the profile of physical therapy care offered in intensive care units (ICU) of public and private hospitals in the city of Rio de Janeiro. To this end, a cross-sectional study was conducted by interviews with the heads/routine chiefs of physical therapy services of the hospitals in the city of Rio de Janeiro with neonatal ICU (NICU) from January 2013 to January 2015. The questions comprised the distribution of working hours, organization and institutional location, time of experience in the area, types of physical therapy techniques and resources used. Twenty seven hospitals (17 public and 10 private) were studied as follows: 6 hospitals in the South area of the city, 8 in the North, 8 in the West and 5 in the central area and port area. The total number of physical therapists of the teams was 141, and 59% of them were experts in neonatal intensive care. With regard to the heads/routine chiefs, 16 (59%) were specialists in neonatal intensive care and 21 (79%) had more than five years of experience. Various physical therapy techniques were cited as: motor physical therapy, chest vibration and thoracic-abdominal rebalance. According

to the results, there was not a single standard regarding routines, protocols, professional organization and training, and techniques used. In addition, it was found that the physical therapy in ICUs was not held full-time, neither provided the three shifts care.

Keywords | Neonatal Intensive Care Units; Newborn; Physical Therapy Modalities; Physical Therapy Techniques.

RESUMO | Este estudo visa ao mapeamento e a caracterização do perfil da assistência fisioterapêutica oferecida em unidades de terapia intensiva (UTI) neonatais dos hospitais públicos e privados do Rio de Janeiro (RJ). Para isso, foram realizadas entrevistas com os chefes sobre as rotinas dos serviços de fisioterapia dos hospitais do Rio de Janeiro com UTI neonatais entre janeiro de 2013 e janeiro de 2015. As perguntas abordaram distribuição das horas de trabalho, organização e localização institucional, tempo de experiência na área, tipos de técnicas fisioterapêuticas e recursos utilizados. Foram incluídos 27 hospitais (17 públicos e 10 privados) da seguinte forma: 6 hospitais na Zona Sul, 8 na Zona Norte, 8

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na Zona Oeste e 5 no Centro e Zona Portuária. O número total de fisioterapeutas integrantes das equipes foi de 141, sendo que 59% deles eram especialistas em terapia intensiva neonatal. No que se refere aos chefes entrevistados, 16 (59%) também eram especialistas e 21 (79%) possuíam mais de cinco anos de experiência. Foram citadas diversas técnicas fisioterapêuticas, como: fisioterapia motora, vibração torácica e reequilíbrio tóraco-abdominal. A partir do exposto, verificou-se que a assistência fisioterapêutica neonatal do Rio de Janeiro não está distribuída uniformemente no território, estando mais concentrada nas regiões Sul e Central. Além disso, falta padronização das rotinas e carga horária, sendo necessária adequação do perfil assistencial para atenção ideal e integral do recém-nascido (RN).

Descritores | Unidades de Terapia Intensiva Neonatal; Recém-Nascido; Modalidades de Fisioterapia; Técnicas Fisioterápicas.

RESUMEN | Este estudio visa el mapeo y la caracterización del perfil de la asistencia fisioterapéutica ofrecida en unidades de cuidados intensivos (UCI) neonatales de los hospitales públicos y privados de Río de Janeiro (RJ), Brasil. Para eso, fueron realizadas entrevistas con los jefes a respecto de las rutinas de los servicios de fisioterapia de

los hospitales de Río de Janeiro con UCI neonatales entre enero de 2013 y enero de 2015. Las preguntas abordaron a respecto de distribución de las horas de trabajo, organización y localización institucional, tiempo de experiencia en la área, tipos de técnicas fisioterapéuticas y recursos utilizados. Fueron incluidos 27 hospitales (17 públicos y 10 privados) de la siguiente forma: 6 hospitales en Zona Sul, 8 en Zona Norte, 8 en Zona Oeste y 5 en Centro y Zona Portuaria. El número total de fisioterapeutas integrantes de los equipos fue de 141, siendo que 59% de ellos eran expertos en cuidados intensivos neonatales. En lo que se refiere a los jefes entrevistados, 16 (59%) también eran expertos y 21 (79%) poseían más de cinco años de experiencia. Fueron citadas diversas técnicas fisioterapêuticas, como: fisioterapia motora, vibración torácica y reequilíbrio tóraco-abdominal. A partir del exposto, se verificó que la asistencia fisioterapêutica neonatal de Río de Janeiro não está distribuída uniformemente en el territorio, estando más concentrada en las regiones Sul y Central. Además, falta padronización de las rutinas y carga horaria, siendo necesaria adecuación del perfil asistencial para atención ideal y integral del neonato.

Palabras clave | Unidades de Cuidados Intensivos Neonatales; Neonato; Modalidades de Fisioterapia; Técnicas Fisioterápicas.

INTRODUCTION

Neonatal intensive care units (NICU) were created with the intention of offering care to the premature newborn (NB)^{1,2}. Over the years, these units were modifying their care and also began to receive NBs with other needs, not always linked to prematurity¹⁻⁴.

Currently, a greater survival rate of NBs is observed thanks to increasingly expressive technical and scientific advances^{1,5}. Before this, there was an increase in the period of hospitalization in the ICUs and care teams were expanded in order to contribute to the excellence of care^{6,7}. The physical therapist participates in these teams and has tasks set on respiratory and motor functions of the newborns⁸. From this, the professional improvement and expertise are necessary to maintain a constant care compatible with the scientific and technical development and peculiarities inherent in the NB^{9,10}.

Insertion of the physical therapist in the NICU is based on the legislation in force¹¹. Ordinance No. 3,432 of the Ministry of Health, in force since 08/12/1998,

determines that the ICUs of tertiary hospitals should count on the physical therapy care full-time¹². Resolution RDC No. 7 from 02/24/2010 regulated the minimum requirements for operation of ICUs and determined that there is a physical therapist for every 10 beds or fraction, in the three shifts¹³. More recently, the Ordinance No. 930 from 05/10/2012 defined the guidelines and objectives for the organization of full-time care of the NB inpatient and the criteria for classification and registration of neonatal beds within the unified health system. In addition, the physical therapist coordinator must have at least 2 years of proven professional experience¹⁴. Although the legislation substantiates, recommends and regulates the presence of physical therapist in NICUs, the routines, techniques used and actual workload are not yet known in the context of municipal, regional and national care. This lack of real evidence imposes an important gap for the knowledge of scenarios and for the verification of adequacy and use of technical care routines according to the literature of the area.

Therefore, the objective of this study was to perform the demographic mapping and characterization of the profile of physical therapy care offered in NICUs of public and private hospitals from the city of Rio de Janeiro.

METHODOLOGY

Cross-sectional and descriptive field research, held from January 2013 to January 2015. The study was approved by the Ethics and Research Committee of the Maternity School of Universidade Federal do Rio de Janeiro, under opinion No. 91,833.

We conducted a mapping of all hospitals that offer pure neonatal care in the study period through consultations to associations and scientific societies related to the area, in addition to the search and confirmation by the Internet. Additionally, we held phone contacts and *in loco* visits to all sites for confirmation of the NICU presence or absence. Every hospital in the city of Rio de Janeiro that had the study profile (n=34) were sought and invited to participate in the study by an informed consent form. ICUs mixed with pediatric care were excluded.

Interviews were conducted with the heads /routine chiefs of physical therapy and the questions dealt with the distribution of working hours, institutional organization, professional qualification and updating, time experience, physical therapy techniques used and limits for use of oxygen therapy. The information provided referred to the chiefs and teams led by them.

Collected data were stored and analyzed through the overview, organization and description of the result set and demonstrated through absolute numbers and percentages.

RESULTS

The final search with the study profile resulted in 34 hospitals. Of these, only 27 hospitals were included (17 public and 10 private). Seven hospitals were excluded for two reasons: they do not rely on physical therapy care at the NICU (n=1) and six did not agree to answer the form.

The geographical distribution of the 27 hospitals demonstrates an excellent representation of the city territory, since the study included 79% of hospitals that offer neonatal care in the period studied, in addition to

being distributed in 5 planning areas (PA) of Rio de Janeiro¹⁵: PA1, 5 hospitals; PA2, 10 hospitals, PA3, 4 hospitals; PA4, 3 hospitals and PA5, 5 hospitals (Figure 1).

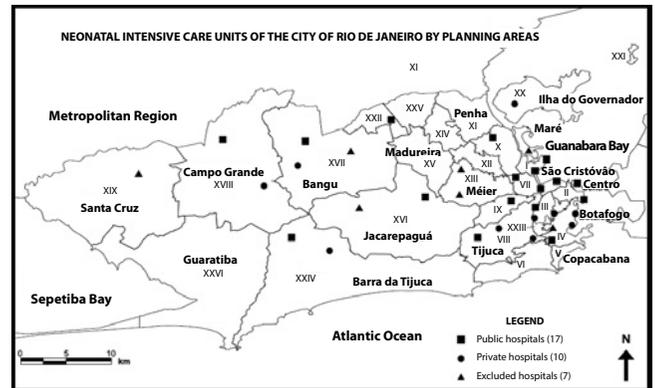


Figure 1. Mapping by areas of planning of hospitals that offer neonatal care in the city of Rio de Janeiro. The numbers represent the planning areas by administrative regions of the city of Rio de Janeiro

PA1: I - Portuária, II - Centro, III - Rio Comprido, VII - São Cristóvão, XXI - Ilha de Paquetá and XXIII - Santa Tereza; PA2: IV - Botafogo, V - Copacabana, VI - Lagoa, VII - Tijuca, IX - Vila Isabel and XXVII Rocinha; PA3: - X Ramos, XI - Penha, XII - Inhaúma, XIII - Méier, XIV - Irajá, XV - Madureira, XX - Ilha do Governador, XXII - Anchieta, XXV - Pavuna, XXVIII - Jacarézinho, XXIX - Complexo do Alemão, XXX - Maré and XXXI - Vigário Geral; PA4: XVI - Jacarepaguá, XXIV - Barra da Tijuca and XXIV Cidade de Deus; PA5: XVII - Bangu, XVIII - Campo Grande, XIX - Santa Cruz, XXVI - Guaratiba and XXXIII - Realengo

Twenty-seven teams contained 141 physical therapists and the profile of physical therapy care found is detailed in Table 1. It was also evidenced that periodic scientific meetings occur in only 8 (30%) visited institutions (6 in public and 2 in private hospitals).

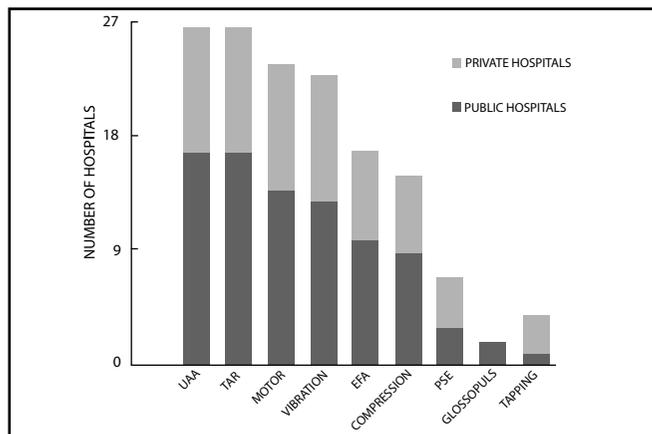
Table 1. Profile of neonatal physical therapy in the city of Rio de Janeiro

	Total	Public (%) (n=17)	Private sector (%) (n=10)
University/Academic hospitals	2	2 (100%)	0
Hours of physical therapy care			
Physical therapy visits	3	3 (100%)	0
6-9 h	5	4 (90%)	1 (10%)
12 h	11	5 (45.4%)	6 (54.5%)
24h	8	5 (62.5%)	3 (37.5%)
Number of beds	387	203 (52.4%)	184 (47.6%)
Hospitals that do not perform exclusive care to NICUs	9	6 (66.7%)	3 (33.3%)
Hospitals with night care	8	5 (62.5%)	3 (37.5%)
Chiefs specialized in Neonatal Physical therapy (n=27)	16	10 (62.5%)	6 (37.5%)
Physical therapists specialized in neonatology (n=141)	84	43 (51%)	41 (49%)

ICUs: Intensive Care Units

Graph 1 shows the physical therapy techniques used in ICUs. The motor physical therapy and the method of thoracic-abdominal rebalance are highlights cited by all professionals. As to the organization of sessions

conducted, it was found that in only 1 (one) hospital the respiratory and motor physical therapy sessions are performed by different teams in different moments. In the other hospitals, the same team (or the same professional) performs respiratory and motor physical therapy in the same session.



Graph 1. Physical therapy techniques used in NICUs in the city of Rio de Janeiro

UAA: Upper airway aspiration; TAR: thoracic-abdominal rebalance; MOTOR: motor physical therapy; EFA: expiratory flow acceleration; COMPRESSION: vibrocompression and compression; PSE: prolonged slow expiration; GLOSSOPULS: retrograde glossopulsion

It was also noted that 22 (81%) teams were conducting guidance for motor physical therapy follow-up after discharge. When we asked about the limits of optimal oxygen use to be used, the answers found that oxygen saturations ranged from 83% (minimum) to 100% (maximum).

DISCUSSION

From the interviews it was possible to geographically map the distribution of hospitals around the city of Rio de Janeiro and to outline a professional and technical profile of the service provided. There was a higher concentration of NICUs in the PAs 1, 2 and 3 in the data collection period. Such PAs correspond to areas close to the city center and adjacencies¹⁵. PAs 4 and 5 basically contain the Western zone and, despite being a large and populous area, it contains the smallest number of NICUs compared to the other areas (Figure 1). Barbosa et al.¹ had demonstrated such distribution. Neonatal ICU beds were not evenly distributed since then, with a predominance of beds in Central, Northern and Southern zones, which correspond to the PAs 1, 2 and 3^{1,15}. This study demonstrated that such reality remains to the present day. The occupation

history of the territory of Rio de Janeiro can explain this fact and, once again demonstrates the clear need to look at the population and urban expansion, seeking to expand the health network to the places most distant from the city center⁷.

There are very few studies in Brazil that characterize the physical therapy in NICUs and the demographic areas that have this cover^{3,16,17}. There are studies in Goiânia (GO)¹⁷, in the Federal District³ and in São Paulo¹⁶. In the first study¹⁷, the ICUs of the public network of Goiânia were analyzed and the working profile of physical therapists were also described through questionnaires. The authors demonstrated a lack of physical therapists in NICUs, with lack of expertise in the Neonatology area. The second study was conducted in the Federal District in 5 hospitals³ and showed that there is no single physical therapy care protocols, corroborating with the data presented in this study. In relation to the work of physical therapists in São Paulo¹⁶, most (98.3%) worked only by day, with the other shifts showing incomplete teams and less than 18 hours of care a day. Such findings are close to those found in Rio de Janeiro, since only 8 hospitals provided 24/7 care. All studies cited reinforced that the hospitalization of high risk NBs for prolonged periods compromises the normal development and that the physical therapist has an important role within the multidisciplinary team^{3,16,17}. It is important to mention that, in all cited studies^{3,16,17} and results found in Rio de Janeiro, there was no adjustment of most hospitals in relation to the current legislation in various obligations. Such a reality is alarming and alerts the competent agencies to pay special attention to the neonatology and to create the need for a national verification of the neonatal physical therapy care offered.

The number of beds in the city of Rio de Janeiro was higher in public institutions compared with the private sector. However, the number of professionals was similar in both sectors. This brings up the need for expansion of teams and, once again, of compliance with regulations in force in some places. Compared with other states, all physical therapists in Goiânia¹⁷ were graduated in related fields, but only one professional was graduated in neonatal intensive care, specifically. In São Paulo¹⁶, 73% of the physical therapists from public units and 86% from private units were graduated in neonatology. The professional qualification data were not mentioned in the study conducted in the Federal District³. It is necessary to cite another human resource mapping in NICUs held in Cuiabá-MT, where it was observed

that physical therapists, unlike evidenced in this study, covered all 3 care shifts. However, it was not a study directed to the detailing of physical therapy but to the realization of a panorama of all categories of working professionals, with an emphasis on nursing¹⁸.

Regarding physical therapy techniques used, in this study we cited: motor physical therapy, thoracic-abdominal rebalance method, chest vibration and vibrocompression, expiratory flow acceleration, tapping, retrograde glossopulsion, prolonged slow expiration and airways aspiration. It was possible to observe a similarity between Rio de Janeiro and São Paulo¹⁶, compared with the Goiânia¹⁷ profile, where only the techniques of vibrocompression, aspiration and compression-decompression were highlighted. In the Federal District³, the main techniques cited were: thoracic-abdominal rebalance, upper airways aspiration, vibration and bag squeezing. There was no uniformity among the physical therapy care protocols cited among the hospitals visited. From such discussions about the technical profile of the sessions, it is possible to infer that, despite several techniques are used, there is no consensus among teams about what would be the best and/or more effective technique. Therefore, it should be discussed why there is this lack of uniformity in the city of Rio de Janeiro and in the mentioned places. Certainly, the lack of scientific evidence for the use of some of these techniques¹⁹ supports this scarcely homogeneous care. More randomized and controlled clinical studies are needed to broaden the scientific knowledge of some evidence.

On the other hand, some of the techniques cited by professionals, such as: slow acceleration of expiratory flow and chest compression followed by slow and complete release of the rib cage coincided with those already set out with evidence in the literature, which caused favorable outcomes and compose the First Brazilian Recommendation of Respiratory Physical therapy in Pediatric and neonatal intensive care units, published in 2012²⁰.

We also observed that most teams guide the follow-up after hospital discharge for respiratory and/or motor physical therapy, with greater emphasis on the latter. This fact can be explained by the higher level of resolution of respiratory disorders during hospitalization and because this resolution is, in most cases, a *sine qua non* condition for hospital discharge. Although the NBs are referred to a specialist, it is impossible to be sure that such a recommendation is followed, since there is a lack of follow-up services in the city, lack of uniformity and specialized clinics for this population²¹.

An analysis of the profile of physical therapists who provide care to adults was held in Brazil in 2008²², with the inclusion of 461 ICUs of all Brazilian regions. It has been shown the physical therapists work mostly in the private sector and have a relative autonomy regarding non-invasive mechanical ventilation, but when they use invasive mechanical ventilation resources, they work under the direction of the attending physicians. Until this moment, there are no national and integrated studies that map the role of physical therapy in neonatal and pediatric ICU, specifically²². The studies are local and with various protocols.

A limitation of this study was the fact that only the heads/routine chiefs were interviewed, due to the long distances between the locations of interviews and the time spent on commute. Although the ideal situation would be that all professional teams have voice, it was found that all people responsible by ICUs were knowledgeable about and members of the care teams.

From the data presented, it was found that neonatal physical therapy care of the city of Rio de Janeiro is not evenly distributed in the territory, with a higher concentration in the Southern and central regions. In addition, there is no standardization of the routines, techniques and workload of care, thus, adjustments are needed to standardize and adapt the care profile to outreach the ideal full-time care of the NB. Further studies are needed to verify associations between the care profile of physical therapy in neonatal units and clinical outcomes, times of hospitalization and discharge and survival rate of the newborn.

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