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Mestrado em Fisioterapia

PARENTS' PERCEPTIONS ON THE EFFECTIVENESS OF PEDIATRIC CHEST PHYSIOTHERAPY FOR BRONCHIOLITIS

A NATIONAL SURVEY

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Leiria, 20 de Setembro 2025

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Dissertação apresentada por Alexandra Saúde Braz à Escola Superior de Saúde do Instituto Politécnico de Leiria para obtenção do grau de Mestre em Fisioterapia, realizada sob a orientação Professora Doutora Joana Patrícia dos Santos Cruz, do Instituto Politécnico de Leiria, da Especialista em Fisioterapia Raquel Maria de Carvalho Faustino, do Instituto Politécnico de Leiria e da Professora Doutora Cândida Susana Gonçalves da Silva, do Instituto Politécnico de Leiria.

Leiria, 20 de setembro de 2025

Acknowledgements

Firstly, I would like to express my sincere gratitude to Professors Joana Cruz, Cândida G. Silva, and Raquel Faustino, for their valuable time, guidance, patience, and unwavering support throughout this journey.

My appreciation extends as well to Professor Joaquim Ferreira and Dra. Natália Pona for generously sharing their knowledge and for their professionalism.

I am also deeply thankful to my colleague and friend Mónica Magro for her continuous support and encouragement, especially during the most challenging moments.

To my colleagues at CNS – Campus Neurológico, thank you for your support, collaboration, and willingness to help whenever needed.

I am also grateful to my friends Daniela, Verónica, Mariana, Filipa R., and Rita, for always being by my side.

Finally, I would like to thank my family for instilling in me the value of perseverance and for their constant encouragement.

To my husband Jorge, thank you for walking every step of this journey with me. Your love, unwavering support, and endless patience have meant more than words can express.

ABSTRACT

Introduction: Acute bronchiolitis is the most common cause of hospitalization for lower respiratory tract infections caused by respiratory syncytial virus in children under the age of two. It is known that most parents do not seek chest physiotherapy promptly, which can lead to a worsening of the condition. This knowledge is essential to increase adherence to treatment, educate parents and encourage their active participation through knowledge of the benefits and adverse events in patients undergoing chest physiotherapy.

Aims: The primary objective of this study was to explore parents' knowledge and perception of chest physiotherapy in children diagnosed with bronchiolitis. Specifically, in the group that received chest physiotherapy sessions, we sought to determine parents' knowledge and perceived benefits. As a secondary objective, we sought to understand the potential adverse events of chest physiotherapy and relate the severity of bronchiolitis to variables related to physiotherapy. In the group that did not undergo chest physiotherapy sessions, we explored the reasons why parents did not seek chest physiotherapy sessions for their children.

Methods: An online, survey-based cross-sectional study was carried out in Portugal, involving parents of children diagnosed with bronchiolitis, divided into 2 groups: Group 1 – those who had never undergone chest physiotherapy, and Group 2 – those whose children had undergone chest physiotherapy at least once. Parents were recruited via social media and from the researchers' network of contacts. Data collection was conducted between March and May 2025 and included demographic and clinical characteristics. Descriptive statistics were performed to characterize the sample and describe the results, and potential- group differences between the stages of bronchiolitis as well as potential differences between groups in relation to the stages of bronchiolitis and in relation to parents' knowledge/perceptions and the chest physiotherapy techniques used in the intervention, using chi-square and Fisher's exact tests.

Results: A total of 100 participants were included: Group 1- 44% whose children did not receive chest physiotherapy (n=44) and Group 2- 56% of respondents whose children received chest physiotherapy (n=56). The majority of respondents (n=70, 70%) resided in Lisbon, were between 30 and 39 years old, and 90% were the children’s mothers (n=90). The children diagnosed with bronchiolitis were between 7 and 9 months old (n=24, 24%), and 20% were diagnosed with mild bronchiolitis (n=20), 34% with moderate bronchiolitis (n=34), and 2% with severe bronchiolitis (n=2). Regarding Group 1, respondents reported not having chest physiotherapy due to the lack of medical recommendation (n=25, 56.8%) and lack of information about the benefits of chest physiotherapy (n=12, 25%). In Group 2, most had 1 to 2 chest physiotherapy sessions (n=33, 58.9%), reported that the sessions were held in outpatient clinics (n=31, 55.4%), and identified as benefits the reduction of pulmonary secretions (n=47, 83.9%), decreased nasal obstruction (n=39, 69.6%), and reduced coughing frequency (n=29, 51.8%). Physiotherapists advised respondents (n=36, 64.3%) to apply certain techniques at home, with nasal irrigation being the most recommended (n=32, 57.1%). Approximately 19.6% of respondents (n=11) reported adverse events, such as extreme tiredness, vomiting, petechiae, and changes

in heart rate, which occurred once in most cases (n=9, 16.1%) and 2–3 times in a few cases (n=2, 3.6%). Reported barriers included the cost of treatment (n=36, 64.3%), followed by lack of knowledge about chest physiotherapy and the absence of referral by a doctor or other healthcare professional (n=21, 37.5%). Statistically significant associations were observed between the severity of bronchiolitis and improvements in feeding, reduced hospitalization time, and parents' perception of the most relevant aspects of the session about session frequency and bronchiolitis severity ($p<0.05$).

Conclusion: This study showed that a significant number of parents do not pursue chest physiotherapy for their children, indicating gaps in awareness and access. The findings emphasize the necessity of enhancing communication between healthcare professionals and parents to ensure the delivery of clear, evidence-based information regarding the benefits and indications of chest physiotherapy.

Keywords: Acute Viral Bronchiolitis (AVB), Chest Physiotherapy, Parents’ perception, Pediatrics; Physical therapy

RESUMO

Introdução: A bronquiolite aguda é a causa mais comum de hospitalização por infeções do trato respiratório inferior causadas pelo vírus sincicial respiratório em crianças com menos de dois anos de idade. Sabe-se que a maioria dos pais não procura prontamente fisioterapia respiratória, o que pode levar a um agravamento do quadro. Este conhecimento é essencial para aumentar a adesão ao tratamento, educar os pais e encorajar a sua participação ativa através do conhecimento dos benefícios e efeitos adversos nos doentes que recorrem à fisioterapia respiratória.

Objetivo: Este estudo teve como objetivo primário explorar o conhecimento e a perceção dos pais acerca da fisioterapia respiratória em crianças com diagnóstico de bronquiolite. Especificamente, no grupo que recebeu sessões de fisioterapia procurou-se determinar o conhecimento dos pais e os benefícios percebidos. Como objetivo secundário procurou-se identificar os potenciais eventos adversos da fisioterapia respiratória e relacionar a gravidade da bronquiolite com as variáveis relacionadas com a fisioterapia. No grupo que não recorreu a sessões de fisioterapia respiratória, exploraram-se os motivos pelos quais os pais não procuraram sessões de fisioterapia torácica para os seus filhos.

Metodologia: Foi realizado em Portugal um estudo transversal online, baseado em inquéritos, que envolveu pais de crianças com diagnóstico de bronquiolite. Os pais foram recrutados através de escolas e redes sociais e da rede de contactos dos investigadores. A recolha de dados foi efetuada entre março e maio de 2025, e incluiu caraterísticas demográficas e clínicas. Foi dividida em 2 grupos: Grupo 1 - Para os participantes que nunca tinham recorrido a fisioterapia respiratória e Grupo 2 - Cujos filhos tinham recorrido a fisioterapia respiratória pelo menos uma vez. Foi realizada a análise de estatística descritiva para caraterizar a amostra, descrever os resultados, bem como as potenciais diferenças entre os grupos em relação aos estadios da bronquiolite e em relação ao conhecimento/perceções dos pais e às técnicas de fisioterapia torácica utilizadas na intervenção, utilizando os testes qui-quadrado e exato de Fisher.

Resultados: Foram incluídos um total de 100 participantes: 44% cujos filhos não receberam fisioterapia torácica (Grupo 1, n=44) e 56% dos inquiridos cujos filhos receberam fisioterapia torácica (Grupo 2, n=56). A maioria dos inquiridos (70%, n=70) residia em Lisboa e tinha entre 30 e 39 anos e 90% eram as mães dos filhos (n=90). As crianças diagnosticadas com bronquiolite tinham entre 7 e 9 meses (n=24, 24%) e 20% foram diagnosticadas com bronquiolite ligeira (n=20), 34% bronquiolite moderada (n=34) e 2% com bronquiolite grave (n=2). Em relação ao grupo 1, os respondentes relataram não ter feito fisioterapia respiratória devido à falta de recomendação médica (n=25, 56,8%) e falta de informação sobre os benefícios da fisioterapia respiratória (n=12, 25%). Relativamente ao grupo 2, a maioria teve 1 a 2 sessões de fisioterapia respiratória (n = 33, 58,9%), relataram que as sessões foram realizadas em contexto de clínica (n = 31, 55,4%) e consideraram como benefícios a redução das secreções pulmonares (n = 47, 83,9%), a redução da obstrução nasal (n=39, 69,6%) e a diminuição da frequência da tosse (n=29, 51,8%). Os fisioterapeutas aconselharam os inquiridos (n=36, 64,3%) a aplicar determinadas técnicas em casa, tendo sido a lavagem nasal a mais recomendada (n=32, 57,1%). Cerca de 19.6% dos inquiridos (n=11) relataram efeitos adversos, ocorrendo uma vez na maioria dos casos (n=9, 16,1%) e 2-3 vezes em alguns casos (n=2, 3,6%). As barreiras relatadas foram o custo do tratamento (n=36, 64,3%), seguido pela falta de conhecimento sobre fisioterapia respiratória e ausência de encaminhamento médico ou de outro profissional de saúde (n=21, 37,5%).

Foram observadas associações estatisticamente significativas entre a severidade da bronquiolite e a melhoria da alimentação, a redução do tempo de hospitalização e a perceção dos pais sobre os aspetos mais relevantes da sessão sobre a frequência das sessões e a gravidade da bronquiolite como um dos aspetos mais relevantes das sessões como a frequência das sessões ($p<0,05$).

Conclusões: Este estudo identificou um número significativo de pais que não procura fisioterapia respiratória para os seus filhos, indicando lacunas na consciencialização e acesso às sessões. Os resultados revelam a

necessidade em melhorar a comunicação entre profissionais de saúde e cuidadores para garantir o fornecimento de informações claras e baseadas em evidências sobre os benefícios e as indicações da fisioterapia respiratória.

Palavras-chave: Bronquiolite Viral Aguda, Fisioterapia respiratória, Perceção dos pais, Pediatria; Fisioterapia.

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I.INTRODUCTION

Acute bronchiolitis is a common cause of hospitalization for lower respiratory tract infections caused by respiratory syncytial virus (RSV) in infants and children under two years of age (Angurana et al., 2023; Roqué-Figuls et al., 2023). It is characterized by acute inflammation, oedema and necrosis of the epithelial cells lining the small airways, leading to increased mucus production and bronchospasm (Pinto et al., 2021; Postiaux et al., 2011). This reduces the airflow and permeability of the small airways, causing hyperinflammation and atelectasis, leading to symptoms such as cough, tachypnea, wheezing and increased work of breathing (Postiaux et al., 2011). The severity of bronchiolitis is assessed by a medical doctor, and it can range from mild to severe (Angurana et al., 2023). Mild and moderate cases can be treated at home, but severe cases require hospitalization (Angurana et al., 2023).

Chest physiotherapy allows clearance of respiratory secretions and improves breathing in mild to moderate stages of the disease (Roqué-Figuls et al., 2023). Specifically, slow passive expiratory techniques, alone or in combination with rhinopharyngeal retrograde technique (RRT) and instrumental techniques, had a positive effect on the Wang Severity Score, shorter recovery time for the child and fewer adverse events (Jen Chin & Ban Seng, 2004) in children with bronchiolitis. On the contrary, infants with severe acute bronchiolitis do not benefit from chest physiotherapy because of the severity of their symptoms (fatigue, apnea, cyanosis, poor hydration, etc.) and possible comorbidities (Roqué-Figuls et al., 2023).

There are few studies reporting adverse events of chest physiotherapy in children with bronchiolitis (Gajdos et al., 2010)(González Bellido et al., 2021). Currently, it is known that forced expiration techniques and conventional physiotherapy (percussion, vibration techniques and postural drainage) do not improve the condition of the child and can lead to adverse events such vomiting and respiratory instability (Roqué-Figuls et al., 2023). In a trial evaluating the efficacy of chest physiotherapy, in which a group was assigned to perform a forced expiratory technique, some adverse events such as bradycardia, vomiting and transient respiratory destabilization occurred during the intervention (Gajdos et al., 2010).

To date, there are few studies evaluating parents' perceptions of the need for chest physiotherapy (Roqué-Figuls et al., 2023). One study assessing parents' perception of their children's tiredness levels during different airway clearance techniques showed that perceived tiredness was higher in the group receiving the RRT only when compared to conventional chest therapy (Gajdos et al., 2010). In another

study, parents reported an improvement in their child's breathing pattern after two chest physiotherapy techniques, such as expiratory acceleration flow technique and percussion (Remondini et al., 2014).

In summary, there is still a lack of research on patients' perceptions on the need of chest physiotherapy for children with bronchiolitis, as well as its perceived benefits and adverse events. This knowledge is fundamental to increasing the timely use of chest physiotherapy services, improving adherence to treatment, and promoting parents' active participation on children's recovery.

This study aimed to explore parents' knowledge and perception of chest physiotherapy in children diagnosed with bronchiolitis. Specifically, in the group that received chest physiotherapy, we sought to determine parents' knowledge and perceived benefits. As a secondary objective, we sought to understand the potential adverse events of chest physiotherapy and relate the severity of bronchiolitis to variables related to physiotherapy. In the group that did not undergo chest physiotherapy sessions, we explored the reasons why parents did not seek chest physiotherapy sessions for their children.

II. METHODS

II.a STUDY DESIGN

This observational cross-sectional study used a structured questionnaire through a survey available online, and it took place in Portugal. The study has been approved by the Ethics Committee of the Polytechnic University of Leiria (CE/IPLEIRIA/117/2024) (ANNEX I) and of a specialized center that supports children in the central region (11.2024-R) (ANNEX II) and it is reported according to the Consensus-Based Checklist for Reporting of Survey Studies (CROSS) (Sharma et al., 2021).

II.b SAMPLE SIZE AND CHARACTERISTICS

The target population was parents of children diagnosed with bronchiolitis, up to 24 months of age, who have never attended chest physiotherapy sessions with their child (Group 1) or who have undergone chest physiotherapy at least once (Group 2). The inclusion criteria were: 1) parents over the age 18 years old; 2) parents or legal tutors of children with medical diagnosis of bronchiolitis up to 24 months of age; 3) be able to read Portuguese language. The exclusion criteria were parents/legal tutors of children with neurological, cardiac or chronic respiratory diseases, or children older than 24 months of age at the time of the physiotherapy treatment.

Since the total size of the population was unknown, it was considered the population to be infinite. Therefore, considering the worst-case scenario (p=50%), to obtain a statistically representative

sample, it was estimated that responses from 385 participants would be necessary, with a margin of error of 5% and a confidence interval of 95%.

II.c SURVEY ADMINISTRATION AND STUDY PREPARATION

An anonymous online survey was prepared on the Google Forms platform (see Appendix I). Before disseminating the survey, a feasibility pre-test was carried out with five participants who were parents of children diagnosed with bronchiolitis. Some of them had attended chest physiotherapy sessions with their children during at least one episode of bronchiolitis, while others had not. The pre-test aimed to assess comprehension and usability issues by completing the survey online, and the feedback received was used to improve the quality of the survey.

Potential participants were recruited through different methods, specifically through social media (Facebook, LinkedIn and Instagram) and from the researchers' network of contacts. On social media, the study was briefly presented and the link to the survey was included. Within the established network, the researchers began by contacting parents to explain the study and those who were interested in participating received the link with detailed information about the study and the survey to fill out. Before starting the survey, potential respondents were asked to give their informed consent by ticking a box in a closed question confirming whether they agreed to take part in the study. If they ticked the box refusing to participate, a message appeared thanking them for their time and ending the questionnaire. Responses were collected between February and March 2025.

II.d STUDY PROCEDURES

The survey was drawn up in accordance with the most recent studies on chest physiotherapy (Gomes et al., 2016; Liard & Neukirch, 2000; Pinto et al., 2021; Roqué-Figuls et al., 2023; Shkurka et al., 2023). It was based on three main sections: parents’ and children’s characterization, parents' knowledge on and perception of the effectiveness of chest physiotherapy interventions, as well as the perception of their benefits and adverse events. The survey consisted mainly of closed-ended questions, some of which allowed for multiple responses. Open-ended response options were incorporated whenever considered appropriate, especially when predefined categories were considered insufficient to capture the full range of relevant responses.

We asked for parental consent to participate in the study after providing detailed information about the study and a brief explanation of the definition of bronchiolitis to contextualize the topic. If the person did not complete or submitted the questionnaire, the authors did not have access to their

answers. There was a section on sample characterization which included questions about sociodemographic data: parents' age, district of residence, relationship with the child, and children's age and comorbidities (to enable the identification of any existing exclusion criteria). This was followed by more specific questions about children's diagnosis of bronchiolitis in the last two years, frequency of bronchiolitis and drug therapy. Then, participants were asked whether their children had undergone chest physiotherapy and, if not, why. For this question, closed-ended options were provided, along with an open-ended option to capture other possible reasons not listed. For participants whose children had never undergone chest physiotherapy (Group 1), the survey ended at this point.

To those who had undergone chest physiotherapy at least once (Group 2), the survey continued with questions related to the stage of bronchiolitis and the chest physiotherapy treatment - specifically its timing, context of the sessions (inpatient, outpatient at hospital, clinic, home or both), number of sessions attended, source of referral for physiotherapy and reason for discharge.

The section "Parents' perception of the intervention" included questions about the intervention plan in the chest physiotherapy sessions, specifically the physiotherapist's availability to explain the techniques used in the session and their objectives, as well as parents' advice to children's care at home. This section was intended to determine whether parents find it important to be taught how to use certain techniques at home and, if so, which ones they consider to be the most important. This section also included questions on the benefits and adverse events perceived by the parents and possible causes for withdrawing or continuing with chest physiotherapy sessions. This section was also focused on the degree of parental satisfaction and aspects that parents consider relevant during the physiotherapist's intervention, to understand the level of satisfaction with the physiotherapy process from referral to discharge, the relevance of maintaining contact between sessions and at discharge, and parents' recognition of physiotherapists as their first line of contact. Factors that could influence access to chest physiotherapy sessions were also assessed, such as the costs associated with the treatment and travel, and lack of access to clinics specializing in chest physiotherapy, among others.

II.e STATISTICAL ANALYSIS

Descriptive analyses were performed for all variables to characterize the sample and describe the results. Mean and standard deviation, median and interquartile interval, range of values, absolute and relative frequencies were calculated depending on the nature of the variable. In group 2 data,

inferential analyses were performed to assess potential differences between groups in relation to bronchiolitis at all stages of severity, and to parents' knowledge/perceptions and chest physiotherapy techniques used in the intervention, using chi-square and Fisher's exact tests. These associations were tested using the Chi-square test of independence. If the assumptions of this test were not met, Fisher's exact test was applied. The level of statistical significance was set at $p \leq 0.05$. The statistical analysis was performed using IBM SPSS Statistics® version 29.0 (SPSS Inc., Chicago, IL).

III. RESULTS

A total of 112 participants completed the questionnaire (Figure 1). However, 12 responses were excluded – in 11 of them, the children were not diagnosed with bronchiolitis, and one child had a neurological disease (Figure 1). Therefore, the final sample was composed of 100 participants, who were divided into two groups: Group 1 (n=44, 44%) – parents whose children were diagnosed with bronchiolitis but did not attend chest physiotherapy sessions and Group 2 (n=56, 56%) – parents of children diagnosed with bronchiolitis who have undergone chest physiotherapy sessions (Figure 1).

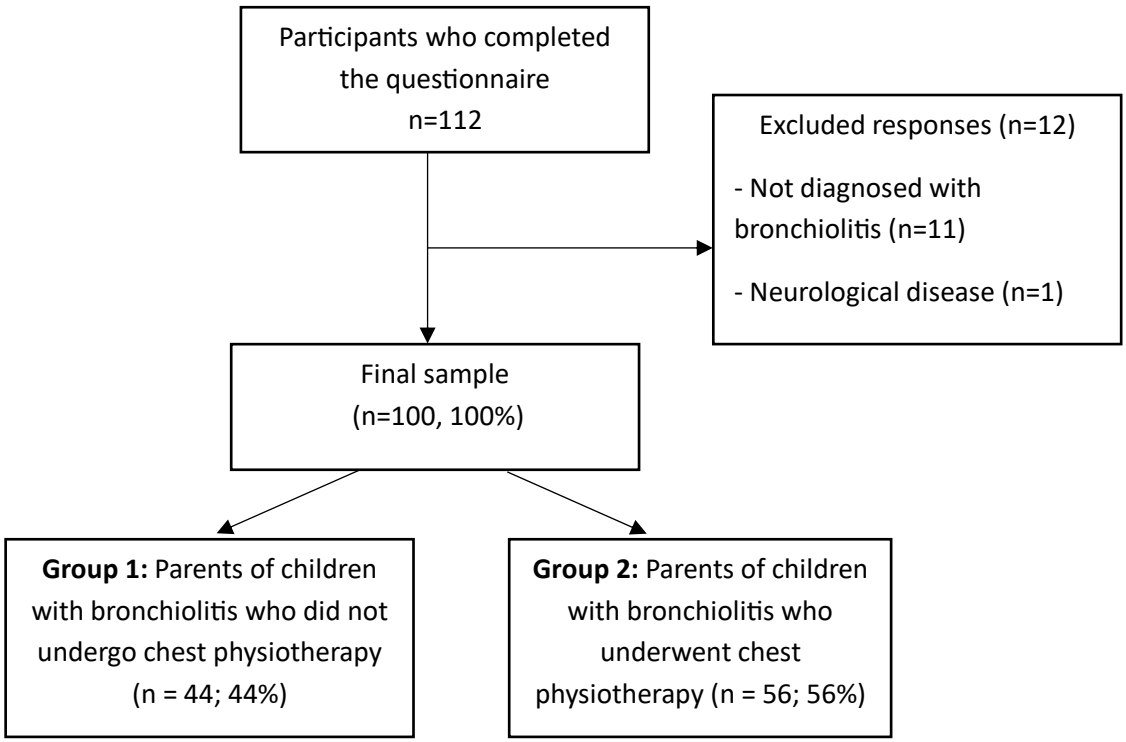

Figure 1- Flow diagram of the participants selection process.

III.a RESPONDENTS' CHARACTERIZATION

Table 1 presents the sociodemographic characteristics of the study respondents. Most of the respondents were mothers (n = 90; 90%), aged between 30 and 39 years (n = 70; 70%). Most

participants were from Lisbon (n = 70; 70%), followed by Leiria (n = 8; 8%), Évora (n = 5; 5%), Aveiro (n = 3; 3%), Braga, Coimbra and Faro (n = 2; 2%), Beja, Guarda, Portalegre and Porto (n = 1; 1%). None of the participants were from the Autonomous Regions of the Azores or Madeira.

Table 1.Sociodemographic characteristics of respondents (n=100).

Relationship with the child	**n (%)**
Mother	90 (90 %)
Father	10 (10 %)
Age group of respondents	
18-29 years	9 (9 %)
30-39 years	70 (70 %)
40-49 years	16 (16 %)
50-59 years	2 (2 %)
60-69 years	3 (3 %)
District of residence	
Aveiro	3 (3 %)
Beja	1 (1 %)
Braga	2 (2 %)
Coimbra	2 (2 %)
Évora	5 (5 %)
Faro	2 (2 %)
Guarda	1 (1 %)
Leiria	8 (8 %)
Lisboa	70 (70%)
Portalegre	1 (1 %)
Porto	1 (1 %)
Viseu	3 (3 %)

III.b CHILDREN'S CHARACTERIZATION

Table 2 presents the clinical characteristics of the children included in this study. Most children diagnosed with bronchiolitis were aged between 7 and 9 months (n=24, 24%), followed by children between 19 and 24 months (n=18, 18%), 13 and 18 months (n=17, 17%), 10 and 12 months (n=14, 14%), 0 and 3 months (n=14, 14%) and between 4 and 6 months (n=13, 13%). In the first 2 years of life, bronchiolitis was diagnosed 1 to 3 times in 72% of cases (n=72), 4 to 6 times in 23% of cases (n=23), 7 to 9 times in 3% of cases (n=3) and 10 or more times in 2% of cases (n=2). The severity of bronchiolitis was mild in 20% of the cases (n=20), moderate in 34% (n=34) and severe in 2% (n=2). A total of 56% of respondents reported that their children attended chest physiotherapy sessions after the diagnosis of bronchiolitis (n=56), while 44% reported that their children did not attend any chest physiotherapy sessions after the diagnosis (n=44).

Table 2. Clinical characterization of children with bronchiolitis (n=100).

Age group of children	**n (%)**
0-3 m	14 (14 %)
4-6 m	13 (13 %)
7-9 m	24 (24 %)
10-12 m	14 (14 %)
13-18 m	17 (17 %)
19-24 m	18 (18 %)
Bronchiolitis in the first 2 years of life	
1-3	72 (72 %)
4-6	23 (23 %)
7-9	3 (3 %)
10 and over	2 (2 %)
Severity of bronchiolitis	
Mild	20 (20 %)
Moderate	34 (34 %)
Severe	2 (2 %)
Chest physiotherapy sessions after diagnosis	
No (Group 1)	44 (44 %)
Yes (Group 2)	56 (56 %)

III.c REASONS FOR NOT UNDERGOING CHEST PHYSIOTHERAPY

Children diagnosed with bronchiolitis who had never received chest physiotherapy (Group 1, n=44) reported that they had not done so because of lack of medical referral (n=25, 56.8%), lack of information about the benefits of chest physiotherapy (n=12, 25%), belief in natural recovery (n=8, 18.2%), financial cost (n=3, 6.8%) and because of other facts such as inaccessibility of the clinic, lack of specialized physiotherapists around the residential area, rapid effect of medication and mild episodes (n=1, 2.3%).

III.d REFERRAL FOR CHEST PHYSIOTHERAPY AND SESSIONS' CHARACTERIZATION

Regarding the referrals for chest physiotherapy in participants whose children had undergone chest physiotherapy at least once (Group 2, n=56), these were made by the pediatrician (n=27, 48.2%), followed by physiotherapist (n=8, 14.3%), self-decision (n=7, 12.5%) and suggested by friends (n=5, 8.9%) (Table 3).

Chest physiotherapy sessions were attended with a frequency of 1–2 sessions (n = 33, 58.9%), 3–4 sessions (n = 16, 28.6%), and 5 or more sessions (n = 7, 12.5%). The sessions took place mainly in outpatient department of the clinic (n = 31, 55.4%), followed by at the patient's residence (n = 21, 37.5%) and inpatient at the hospital (n = 6, 10.7%). There were also inpatient sessions which were

followed by outpatient sessions at the hospital (n = 3, 5.4%), and outpatient sessions at the hospital (n = 2, 3.6%) (Table 3).

Table 3. Clinical characterization of children in group 2 (n=56).

Referral	**n (%)**
Pediatrician	27 (48.2%)
Physiotherapist	8 (14.3%)
Self-decision	7 (12.5%)
Friends	5 (8.9%)
Family	3 (5.4%)
Family doctor	3 (5.4%)
Nurse	2 (3.6%)
Intensive care doctor	1 (1.8%)
Frequency of the sessions	
1–2 sessions	33 (58.9%)
3–4 sessions	16 (28.6%)
5 or more sessions	7 (12.5%)
Context	
Outpatient department of the clinic	31 (55.4%)
Patient's residence	21 (37.5%)
Inpatient at the hospital	7 (12.5%)
Inpatient sessions which were followed by outpatient sessions at the hospital	3 (5.4%)
Outpatient sessions at the hospital	2 (3.6%)

The following sections describe the perceived benefits, techniques used on site and at home, satisfaction about the chest physiotherapy process, barriers for undergoing chest physiotherapy and chest physiotherapy factors associated with severity of bronchiolitis for participants whose children had undergone chest physiotherapy at least once (Group 2, n=56). For this reason, the percentages reported below refer exclusively to the 56 participants (i.e., the 56 participants represent 100% of the sample).

III.e PERCEIVED BENEFITS OF CHEST PHYSIOTHERAPY

Regarding the benefits of chest physiotherapy (Table 4), the respondents identified a reduction in lung secretions (n=47, 83.9%), reduction in nasal obstruction (n=39, 69.6%) and a decrease in cough frequency (n=29, 51.8%). Additionally, improvement in sleep quality (n=26, 46.4%), improvement in quality of life (n=24, 42.9%), improvement in diet (n=19, 33.9%), avoidance of hospitalization (n=13, 23.2%), improvement of oxygen levels (n=11, 19.6%), improvement heart rate (n=6, 10.7%), reduction in hospitalization time (n=3, 5.4%) were also reported. One respondent (1.8%) did not perceive any benefits from the physiotherapy sessions (Table 4).

Table 4. Perceived benefits of chest physiotherapy (n=56).

Benefits of chest physiotherapy	n (%)
Reduction in lung secretions	47 (83.9%)
Reduction in nasal obstruction	39 (69.6%)
Decrease in cough frequency	29 (51.8%)
Improvement in sleep quality	26 (46.4%)
Improvement in quality of life	24 (42.9%)
Improvement in diet	19 (33.9%)
Avoidance of hospitalization	13 (23.2%)
Improvement of oxygen levels	11 (19.6%)
Improvement of heart rate	6 (10.7%)
Reduction in hospitalization time	3 (5.4%)
No benefits	1 (1.8%)

III.f PERCEIVED OF CHEST PHYSIOTHERAPY TECHNIQUES ON SITE AND AT HOME

Most respondents considered that chest physiotherapy techniques were well explained and were useful for understanding how techniques work (n=53, 94.6%).

Among these respondents, rhinopharyngeal retrograde technique (n=32, 57.1%), percussion (n=23, 41.1%) and slow expiration techniques (n=21, 37.5%), nasal wash (n=18, 32.1%), were identified as the most important techniques to be taught for home applications. Conversely, certain techniques were considered less important for home teaching, including forced expiration techniques (n=7, 12.5%), nasal washing with saline drops in each nostril (n=4, 7.1%), vibration (n=3, 5.4%) and postural drainage (n=1, 1.8%) (Table 5).

Table 5. Perceived of chest physiotherapy techniques on site and at home (n=56).

Perceived of chest physiotherapy techniques on site and at home	n (%)
Rhinopharyngeal Retrograde technique	32 (57.1%)
Nasal wash	18 (32.1%)
Percussion	23 (41.1%)
Slow expiration techniques	21 (37.5%)
Forced expiration techniques	7 /12.5%)
Nasal washing with saline drops in each nostril	4 (7.1%)
Vibration	3 (5.4%)
Postural drainage	1 (1.8%)

The physiotherapists advised 36% respondents (n=64.3) to apply certain techniques at home, with nasal washing being the most recommended (n=32, 57.1%). The respondents reported using nasal wash (n=49, 87.5%) primarily to reduce nasal secretions (n=38, 67.9%) and as a routine measure to prevent new infections (n=18, 32.1%). The perceived benefits of nasal wash included the elimination of nasal secretions (n=54, 96.4%), a reduction in both daytime and nighttime coughing (n=25, 44.6%)

and reduced the number of sessions of chest physiotherapy (n=10, 17.9%) (Table 6). Among those who did not use the technique (n=6, 10.7%), the main reasons cited were lack of knowledge about the method (n=4, 7.1%), lack of confidence in applying it (n=1, 1.8%) and uncertainty regarding its correct use (n=1, 1.8%).

Table 6. Benefits of application of nasal wash by the respondents (n=56).

Benefits of application of nasal wash by the respondents	**n (%)**
Elimination of nasal secretions	54 (96.4%)
Reduction in both daytime and nighttime coughing	25 (44.6%)
Reduced the number of sessions of chest physiotherapy	10 (17.9%)

During chest physiotherapy sessions, 19.6% of respondents (n=11) reported adverse events, occurring once in most cases (n=9, 16.1%) and 2–3 times in a few cases (n=2, 3.6%). The most reported adverse events were extreme tiredness (n=8, 14.3%), vomiting (n=3, 5.4%), petechiae (n=1, 1.8%), and changes in heart rate (n=1, 1.8%) (Table 7).

Table 7. Adverse events of chest physiotherapy techniques on site and at home (n=56).

Adverse events	**n (%)**
Extreme tiredness	8 (14.3%)
Vomiting	3 (5.4%)
Petechiae	1 (1.8%)
Changes in heart rate	1 (1.8%)

III.g SATISFACTION ABOUT THE CHEST PHYSIOTHERAPY PROCESS

Regarding the chest physiotherapy process from referral to discharge, respondents reported high levels of satisfaction: 53.6% were extremely satisfied (n=30), 44.6% were very satisfied (n=25), and 1.8% were neutral (n=1) (Table 8).

In terms of the physiotherapist's explanation to parents about the nature of bronchiolitis and what to expect during sessions (e.g., crying without pain), 41.1% were very satisfied (n=23), 7.1% were neutral (n=4) and 1.8% reported low satisfaction (n=1) (Table 8).

Satisfaction with the physiotherapist's intervention during sessions was also high: 58.9% were extremely satisfied, 39.3% were very satisfied (n=22), and 1.8% were neutral (n=1). The most valued aspects of chest physiotherapy included their child's comfort (n=47, 83.9%), the therapeutic relationship (n=46, 82.1%), the physiotherapist's intervention (n=43, 76.8%), having an emergency (SOS) contact with the physiotherapist outside of sessions (n=23, 41.1%), the frequency (n=12,

21.4%) and duration of sessions (n=9, 16.1%), and the absence of crying during sessions (n=5, 8.9%) (Table 8).

A total of 75% of respondents (n=42) felt that the physiotherapist should remain available after the end of treatment, although not as the first line of contact (n=29, 51.8%). Most respondents (n=38, 67.9%) maintained some form of follow-up contact with the physiotherapist. Those who did not (n=4, 7.1%) cited reasons such as formal discharge from physiotherapy (n=9, 16.1%), preference for communication through a physician or clinic, the physiotherapist's refusal to share contact information and change of clinic (n=2, 3.6%) (Table 8).

Table 8. Parental satisfaction and perspectives regarding chest physiotherapy (n=56).

Parents' satisfaction and perspectives	n (%)
Satisfaction with chest physiotherapy process	
Extremely satisfied	30 (53.6%)
Very satisfied	25 (44.6%)
Neutral	1 (1.8%)
Satisfaction with explanation of what to expect during sessions	
Very satisfied	23 (41.1%)
Neutral	4 (7.1%)
Low satisfaction	1 (1.8%)
Relevant aspects of chest physiotherapy	
Child's comfort	47 (83.9%)
Therapeutic relationship	46 (82.1%)
Physiotherapist's intervention	43 (76.8%)
Emergency (SOS) contact with the physiotherapist outside of sessions	23 (41.1%)
Frequency of sessions	12 (21.4%)
Duration of sessions	9 (16.1%)
Absence of crying during sessions	5 (8.9%)
Reasons for not maintaining contact with the physiotherapist	
Formal discharge from physiotherapy	9 (16.1%)
Preference for communication through a physician or clinic	2 (3.6%)
The physiotherapist's refusal to share contact information	2 (3.6%)
Change of clinic	2 (3.6%)

III.h BARRIERS FOR UNDERGOING CHEST PHYSIOTHERAPY

Several factors were identified as barriers to accessing chest physiotherapy sessions. The most frequently reported was the cost of treatment (n=36, 64.3%), followed by a lack of knowledge about chest physiotherapy and absence of a referral from a physician or other healthcare professional (n=21, 37.5%). Additional barriers included limited access to specialist clinics near the place of residence (n=16, 28.6%), past negative experiences with chest physiotherapy (n=13, 23.2%), parents'

work schedules (n=10, 17.9%), lack of availability of home physiotherapy services (n=9, 16.1%), travel-related costs (n=5, 8.9%), language barriers (n=5, 8.9%), and lack of support from family or friends (n=3, 5.4%) (Table 9).

Table 9. Barriers for undergoing chest physiotherapy (n=56).

Barriers for undergoing chest physiotherapy	**n (%)**
Cost of treatment	36 (64.3%)
Lack of knowledge about chest physiotherapy	21 (37.5%)
Absence of a referral from a physician or other healthcare professional	21 (37.5%)
Limited access to specialist clinics near the place of residence	16 (28.6%)
Past negative experiences with chest physiotherapy	13 (23.2%)
Parents' work schedules	10 (17.9%)
Lack of availability of home physiotherapy services	9 (16.1%)
Travel-related costs	5 (8.9%)
Language barriers	5 (8.9%)
Lack of support from family or friends	3 (5.4%)

III.g CHEST PHYSIOTHERAPY FACTORS ASSOCIATED WITH THE SEVERITY OF BRONCHIOLITIS

The association between the severity of bronchiolitis and factors such as referral for chest physiotherapy, session frequency, localization of chest physiotherapy, benefits of chest physiotherapy, explanation and usefulness of techniques, techniques applied by the physiotherapist, adverse events and relevant aspects of the session (e.g. comfort of the child, SOS contact of the physiotherapist outside the sessions, absence of crying during the sessions, session's duration and frequency, physiotherapist intervention and therapeutic relationship) were investigated (Appendix II – Tables 10 to 19, respectively).

When exploring the association between the benefits of chest physiotherapy and the severity of bronchiolitis, it was found that improvement in diet ($p<0.010$) and reduction in hospitalization time ($p<0.056$) was significantly associated with the severity of bronchiolitis. Improved eating habits were more prevalent in the mild stage (n=10, 17.9%) and the moderate stage (n=7, 12.5%) of bronchiolitis (Appendix II- Table 13).

Regarding the respondents' perception of the most relevant aspects of the session, there was an association between session frequency and bronchiolitis severity ($p<0.047$). This factor was perceived by the parents of children with moderate bronchiolitis (n=11, 19.6%) (Appendix II- Table 18).

The association between the stage of bronchiolitis and referral for chest physiotherapy was also investigated, but no association was identified between them ($p=0.685$) (Appendix II- Table 10). Similarly, there was also no association between the frequency and localization of physiotherapy

sessions, adverse events, and access to chest physiotherapy sessions (p>0.05) (Appendix II- Table 11,12,17 e 19).

IV. DISCUSSION

To the best of our knowledge, this is the first study to investigate parents' knowledge and perceptions of chest physiotherapy for children with bronchiolitis, and to systematically document the perceived benefits and potential adverse events associated with chest physiotherapy. The present study showed that almost half of parents with children with bronchiolitis do not seek chest physiotherapy with the main reasons for that being lack of medical referral, lack of information about the benefits of chest physiotherapy and belief in natural recovery. Those who have attended chest physiotherapy at least once reported benefits including the reduction of lung secretions, reduction of nasal obstruction, and decreased cough frequency. Adverse events were reported, such as extreme tiredness, vomiting, petechiae, and changes in heart rate. The most used techniques were RRT, percussion and slow expiration techniques on site or at home. A substantial proportion of respondents expressed high satisfaction with the overall process, from referral to discharge. Associations with bronchiolitis severity were observed for variables such as feeding in mild stages and length of hospitalization in moderate stages.

Parents' (lack of) awareness of and referral to chest physiotherapy

The present study showed that approximately half of the children diagnosed with bronchiolitis did not attend chest physiotherapy sessions. The most frequently cited reason for not receiving chest physiotherapy was the absence of medical referrals, raising important questions about the integration of chest physiotherapy into pediatric clinical practice and the role of healthcare professionals in guiding caregivers. Additionally, a considerable proportion of parents reported a lack of information about the benefits of chest physiotherapy and a belief in natural recovery as key reasons for not seeking this intervention. This problem also exists in other countries. A systematic review found that from 21 guidelines, only one recommended chest physiotherapy for children with bronchiolitis (Kirolos et al., 2021). These findings highlight a potential communication gap between healthcare providers and children's parents. They emphasize the need for more effective health education strategies. The guidelines are based on scientific studies, but there is some controversy surrounding physiotherapy for bronchiolitis. This may also explain why physiotherapy is not recommended in these

cases. Therefore, it is essential that parents are aware of the signs indicating when to seek physiotherapy assistance.

The lack of timely referral may negatively affect the child's prognosis and quality of life, emphasizing the importance of ensuring that healthcare professionals are well-informed about the benefits and indications of chest physiotherapy in bronchiolitis management. Most referrals originated from medical professionals, specifically pediatricians during the moderate stage of bronchiolitis, which emphasizes the critical role of the pediatric medical team in influencing parental decision-making. These findings are in line with previous research, such as a recent study in Tunisia, which reported that the medical team commonly prescribes chest physiotherapy, with prescriptions being issued more frequently at university hospitals than in private clinics (Hadj et al., 2021). Notably, the present data also revealed that some parents sought physiotherapy on their own initiative or on advice from family or friends, without a direct medical referral. Although less common, this may reflect higher health literacy levels or prior positive experiences with chest physiotherapy. Nevertheless, trust in medical recommendations appears to be the main driver behind seeking treatment promptly, highlighting the importance of clear and accessible communication between healthcare providers and families.

To bridge this communication gap, implementing targeted health education programs aimed at both healthcare professionals and parents is essential. Such initiatives should include ongoing training for pediatricians and physiotherapists to keep them updated on current evidence and best practices, as well as educational resources to inform parents about the benefits and appropriate timing of chest physiotherapy. Improving multidisciplinary collaboration and developing clear referral protocols may further facilitate timely access to physiotherapy services for children with bronchiolitis.

Parental perceptions on chest physiotherapy for children with bronchiolitis

The findings revealed that parents whose children underwent chest physiotherapy sessions for bronchiolitis reported multiple perceived benefits, including reduced pulmonary and nasal secretions, improved sleep and feeding, decreased coughing, and shorter length of hospitalization. These perceptions were significantly associated with the mild and moderate stages of bronchiolitis. These results align with existing literature, which suggests that parents' perceptions of non-pharmacological interventions—such as airway clearance techniques—reflect symptom alleviation and improvements in breathing, feeding, and nasal congestion in infants with bronchiolitis (Roqué-Figuls et al., 2023).

The perceived benefits reported by parents often encouraged the initiation and continuation of chest physiotherapy sessions, as these improvements provided comfort and motivation for their child's recovery. Conversely, although adverse events were relatively rare, their occurrence could influence some parents' decisions to discontinue or avoid therapy. The present study showed that adverse events were less frequent and mostly associated with mild or moderate stages, yet they remained a concern for parents. We believe that low incidence is attributable to close monitoring by physiotherapists during sessions, ensuring that the highest standards of care and security are maintained. Supporting this, a previous study combining airway clearance techniques with bronchodilators and hypertonic saline in non-hospitalized children with bronchiolitis reported immediate positive effects on clinical status and very few mild adverse events such as tachycardia, vomiting, and epistaxis (González Bellido et al., 2021). Additionally, parents reported a positive perception regarding their child's tiredness during chest physiotherapy sessions, reflecting their understanding of treatment effects and the balancing of benefits against mild adverse sensations (González Bellido et al., 2021).

Parental satisfaction with chest physiotherapy sessions was also influenced by emotional and relational factors, including trust in the physiotherapist and the therapeutic relationship established during treatment. Parents valued the physiotherapist's ability to provide comfort to their child and to guide them through the treatment process, which enhanced their confidence and sense of control over the illness. While most parents appreciated follow-up contact with the physiotherapist, they preferred not to have physiotherapists as the initial point of contact, indicating a preference for multidisciplinary care involving both physicians and physiotherapists. This highlights the importance of clear communication and coordinated healthcare to support parental decision-making regarding chest physiotherapy.

Limitations

The study's main limitations include methodological issues, such as selection bias and sample representativeness, specifically in terms of the representation of fathers vs. mothers, age groups and regions of the country. Furthermore, it is not possible to generalize the results because it was not possible to reach the sample size calculated previously. Future research should consist of longitudinal studies exploring the impact of chest physiotherapy on parents' perceptions and knowledge, as well

as the collection of clinical data and a comparative analysis involving more countries and different socioeconomic contexts.

V. CONCLUSION

This study revealed that many parents still do not seek chest physiotherapy for their children in an episode of bronchiolitis, underscoring significant gaps in awareness of and access to this type of intervention. The findings highlight the urgent need to improve communication between healthcare professionals and parents, ensuring that these receive clear, evidence-based information about the benefits and indications for chest physiotherapy.

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VII. APPENDICES

Appendix I - Parents' perceptions on pediatric chest physiotherapy for bronchiolitis: A national survey – Final questionnaire

Appendix II- Tables with information on statistical association between the severity of bronchiolitis and the variables referral, frequency and localization of chest physiotherapy, benefits, explanation, usefulness, techniques applied by the physiotherapist, relevant aspects about the session and access to chest physiotherapy sessions

VII.a APPENDIX I - PARENTS' PERCEPTIONS ON PEDIATRIC CHEST PHYSIOTHERAPY FOR BRONCHIOLITIS: A NATIONAL SURVEY – FINAL QUESTIONNAIRE

A percepção dos pais sobre a efetividade da fisioterapia respiratória em crianças com bronquiolite: Um inquérito em Portugal

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O presente estudo realiza-se no âmbito
da Unidade Curricular Dissertação, do 2º ano do curso de Mestrado em
Fisioterapia da Escola Superior de Saúde do Politécnico de Leiria.
. O estudo
tem como objetivo identificar os conhecimentos e a perceção dos pais sobre a fisioterapia respiratória nas crianças com diagnóstico de bronquiolite. Deste modo, pretendemos explorar as diferenças de conhecimento ou perceção entre os que realizaram e os que não realizaram sessões de fisioterapia respiratória. O objetivo secundário é identificar os benefícios e os potenciais eventos adversos da fisioterapia respiratória em crianças com bronquiolite. Para tal, irá ser realizada a recolha de dados através de um inquérito
disponibilizado online, onde serão feitas algumas questões sobre o conhecimento e perceção dos pais em relação à fisioterapia respiratória para crianças com bronquiolite, independentemente de terem tido ou não contacto com este tipo de intervenção. Nos pais que já procuraram a fisioterapia para tratar a criança com bronquiolite, serão questionados o tipo de intervenção realizado e se foram ensinadas algumas técnicas e cuidados a ter em casa. Perceber qual o grau de satisfação dos pais em relação às sessões e identificar os aspetos que consideram mais relevantes nas sessões de fisioterapia respiratória bem como, identificar o nível de satisfação desde admissão até à alta, a importância de manter contacto com o fisioterapeuta e avaliar as facilidades e barreiras de acesso às sessões de fisioterapia. A
participação é de carácter voluntário e os dados só serão validados se clicar em "Submeter" no final do inquérito. Este estudo mereceu parecer favorável da Comissão de Ética. Será garantida a confidencialidade e anonimato dos participantes e o uso exclusivo dos dados recolhidos para o presente estudo. Os dados poderão ser utilizados em comunicações e publicações científicas, sem qualquer quebra de confidencialidade e anonimato.

A estudante e
as orientadoras agradecem a sua disponibilidade e colaboração neste estudo.

Em caso de
dúvida ou questões, estaremos disponíveis através dos e-mails: 5230198@my.ipleiria.pt; joana.cruz@ipleiria.pt; candida.silva@ipleiria.pt; raquel.faustino@ipleiria.pt.

Por favor, leia com atenção a seguinte informação. Se achar que algo está incorreto ou que não está claro, não hesite em solicitar mais informações à Comissão de Ética do Instituto Politécnico de Leiria (email: comissao.etica@ipleiria.pt). Se concorda com a proposta que lhe foi feita, queira assinar este documento.

alexandra.saude.901@gmail.com Mudar de conta

Não partilhado

* Indica uma pergunta obrigatória

Selecionar apenas uma opção: *

- ◯ Declaro ter lido e compreendido este documento, bem como as informações que me foram fornecidas pelas pessoas que acima assinam. Foi-me garantida a possibilidade de, em qualquer altura, recusar participar no estudo sem qualquer tipo de consequências. Desta forma, aceito participar neste estudo e permito a utilização dos dados, que de forma voluntária forneço, confiando em que apenas serão utilizados para fins científicos e publicações que delas decorram e nas garantias de confidencialidade e anonimato que me são dadas pelos investigadores.
- ◯ Não autorizo.

1. Caracterização da amostra

(Selecionar apenas uma opção)

1.1- Idade: *

- ◯ 18-29 Anos
- ◯ 30-39 Anos
- ◯ 40-49 Anos
- ◯ 50-59 Anos
- ◯ 60-69 Anos

1.2- Distrito de residência: *

- ◯ Aveiro
- ◯ Beja
- ◯ Braga
- ◯ Castelo Branco

- ◯ Coimbra
- ◯ Évora
- ◯ Faro
- ◯ Guarda
- ◯ Leiria
- ◯ Lisboa
- ◯ Portalegre
- ◯ Porto
- ◯ Santarém
- ◯ Setúbal
- ◯ Viana do Castelo
- ◯ Vila Real
- ◯ Viseu
- ◯ Região Autónoma da Madeira
- ◯ Região Autónoma dos Açores

1.3- Grau de parentesco com a criança: *

- ◯ Mãe
- ◯ Pai
- ◯ Representante Legal

2. Caracterização da criança

2.1- Idade da criança em meses (m): *

- ◯ 0-3 m
- ◯ 4-6 m
- ◯ 7-9 m
- ◯ 10-12 m
- ◯ 13-18 m
- ◯ 19-24 m

2.2- Sexo da criança

- ◯ Feminino
- ◯ Masculino

A bronquiolite aguda é a causa comum de infeções do trato respiratório inferior causada pelo vírus sincicial respiratório (VSR) em bebés e crianças com menos de dois anos de idade. Os sintomas mais frequentes são a tosse, pieira, febre, secreções nasais e oculares e dificuldade em respirar. A severidade pode variar entre ligeira e severa podendo levar à hospitalização.

2.3- O seu bebé alguma vez teve o diagnóstico de bronquiolite? *

- ◯ Sim
- ◯ Não

2.4- Quantas vezes foi diagnosticada com bronquiolite durante os dois primeiros anos de vida?

A sua resposta

2.5- Fez alguma terapia farmacológica para o tratamento da bronquiolite?

- ◯ Sim
- ◯ Não

2.6- Após o diagnóstico de bronquiolite, o seu bebé realizou sessões de fisioterapia respiratória?

- ◯ Sim
- ◯ Não

2.6.1- Se não fez sessões de fisioterapia respiratória, qual foi o motivo? *

(Selecionar uma ou várias opções)

- ◯ Falta de recomendação médica para realizar sessões
- ◯ Falta de informação sobre os benefícios da fisioterapia respiratória
- ◯ Crença na recuperação natural
- ◯ Medo do desconforto da criança
- ◯ Custos financeiros
- ◯ Falta de acessibilidade à clínica
- ◯ Falta de fisioterapeutas especializados na área de residência
- ◯ Severidade da doença associado a outras condições clínicas
- ◯ Outra: _____

Algumas questões dirigem-se apenas às crianças que realizaram fisioterapia respiratória pelo menos uma vez, por isso se respondeu *não* na questão 2.6 o seu questionário termina nesta fase. Muito obrigada pela sua participação!

2.6.2- Qual o estadio da bronquiolite quando realizou fisioterapia respiratória? *

- ◯ Ligeiro (Mantém secreções no nariz e tosse, mas sem sinais de dificuldade respiratória, sem pieira, sem alteração da condição geral)
- ◯ Moderado (Alguns sinais de dificuldade respiratória, pieira em toda a fase da expiração e maior irritabilidade)
- ◯ Severa (Com sinais graves de dificuldade respiratória, prostração e apatia)

2.7- Em que contexto realizou sessões de fisioterapia respiratória: *

- ◯ Internamento hospitalar
- ◯ Ambulatório em contexto hospitalar
- ◯ Ambulatório em contexto de clínica
- ◯ Em contexto de domicílio
- ◯ Em contexto de internamento e ambulatório

2.8- Até ao momento, quantas vezes recorreu à fisioterapia respiratória para tratar bronquiolites (deve contabilizar o número de vezes que contactou o fisioterapeuta por cada bronquiolite e não o total de sessões realizadas)? *

- ◯ 1-2
- ◯ 3-4
- ◯ 5 ou mais

2.9- Quem fez o encaminhamento para a fisioterapia? *

- ◯ Médico que acompanha
- ◯ Outros profissionais de saúde - Quais?
- ◯ Familiares
- ◯ Amigos

2.10- Qual o motivo da alta da fisioterapia? *

- ◯ Melhoria clínica
- ◯ Efeitos adversos antes, durante ou após a sessão
- ◯ Internamento hospitalar
- ◯ Recomendação médica
- ◯ Alta hospitalar

3. Perceção dos pais em relação à intervenção

(Selecionar uma ou várias opções)

3.1- Qual(ais) a(s) técnica(s) utilizada(s)? *

- ◯ Lavagem Nasal (Lavar o nariz com soro fisiológico com seringa e adaptador)
- ◯ Aplicação de soro fisiológico no nariz (colocação de soro com doses individuais apenas nas narinas)
- ◯ Desobstrução Rinofaríngea Retrógrada (colocação de soro com doses individuais e tapar uma narina e boca em simultâneo para limpar as vias aéreas posteriores)
- ◯ Técnicas de expiração lenta (Técnica passiva com pressão manual torácica e abdominal)
- ◯ Técnicas de expiração forçada (Técnicas que permitem provocar a tosse)
- ◯ Vibração manual (colocação das mãos sobre o tórax e criando o movimento de vibração durante a respiração)
- ◯ Percussão (Aplicação ritmada de batidas manuais sobre o tórax)
- ◯ Posicionamentos (mudança de posição do corpo, sem outro tipo de intervenção)

3.2- Em algum momento, o fisioterapeuta responsável pelas sessões lhe explicou as técnicas de intervenção e o objetivo das mesmas? *

- ◯ Sim
- ◯ Não

3.3- Em algum momento lhe foi aconselhado pelo fisioterapeuta responsável realizar algumas técnicas em casa? *

- ◯ Sim
- ◯ Não

3.4- Considera pertinente o ensino de algumas técnicas aplicadas pelo fisioterapeuta, para realizar em casa? *

- ◯ Sim
- ◯ Não

3.4.1- Se sim, quais as técnicas que considera mais importantes para aplicar em casa? *

(Selecionar uma ou várias opções)

- [ ] Lavagem Nasal (Lavar o nariz com soro fisiológico com seringa e adaptador)
- [ ] Aplicação de soro fisiológico no nariz (colocação de soro com doses individuais apenas nas narinas)
- [ ] Desobstrução Rinofaríngea Retrógrada (colocação de soro com doses individuais e tapar uma narina e boca em simultâneo para limpar as vias aéreas posteriores)
- [ ] Técnicas de expiração lenta (Técnica passiva com pressão manual torácica e abdominal)
- [ ] Técnicas de expiração forçada (Técnicas que permitem provocar a tosse)
- [ ] Vibração manual (Colocação das mãos sobre o tórax e criando o movimento de vibração durante a respiração)
- [ ] Percussão (Aplicação ritmada de batidas manuais sobre o tórax)
- [ ] Posicionamentos (Mudança de posicionamento sem outro tipo de intervenção)

3.5- Indique quais os benefícios das sessões de fisioterapia respiratória que conseguiu observar após as sessões: *

(Selecionar uma ou várias opções)

- [ ] Redução da obstrução nasal
- [ ] Redução das secreções pulmonares
- [ ] Redução da tosse
- [ ] Melhorar a qualidade do sono
- [ ] Melhorar a alimentação
- [ ] Melhorar os batimentos cardíacos e o nível de oxigénio
- [ ] Reduzir o tempo de internamento hospitalar
- [ ] Prevenir o internamento hospitalar
- [ ] Melhorar a qualidade de vida
- [ ] Nenhum
- [ ] Outra: _____

3.6- Antes de realizar fisioterapia respiratória, já conhecia e aplicava a técnica de lavagem nasal? *

- ◯ Sim
- ◯ Não

3.6.1. Se não, porquê? *

(Selecionar uma ou várias opções)

- [ ] Falta de conhecimento da técnica
- [ ] Falta de ensino sobre o manuseamento da técnica
- [ ] Receio de causar desconforto à criança
- [ ] Medo de possíveis efeitos adversos
- [ ] Insegurança sobre a sua aplicação
- [ ] Dificuldade de colaboração da criança

3.6.2- Se sim, em que situações? *

(Selecionar uma ou várias opções)

- [ ] Por rotina, para prevenção de novas infeções
- [ ] Apenas quando está mais congestionado
- [ ] Após indicação de benefícios para o bem-estar da criança
- [ ] Outra: _____

3.7- Em algum momento, o fisioterapeuta lhe ensinou a fazer a lavagem nasal ao seu bebé? *

- ◯ Sim
- ◯ Não

3.7.1- Se não, consideraria importante o ensino da lavagem nasal? *

- ◯ Sim
- ◯ Não

3.8- Quais os benefícios que considera relevantes para a utilização da lavagem nasal? *

(Selecionar uma ou várias opções)

- [ ] Permite eliminar secreções a nível superior (nariz)
- [ ] Reduz a tosse durante o dia e noite
- [ ] Permite reduzir o número de sessões de fisioterapia respiratória
- [ ] Melhora o bem-estar geral da criança
- [ ] Melhora o sono
- [ ] Outra: _____

3.9- Antes, durante ou depois das sessões de fisioterapia respiratória deparou-se com algum possível efeito negativo em, pelo menos uma, das sessões? *

- ◯ Sim
- ◯ Não

3.9.1- Se sim, qual(ais)? *

(Selecionar uma ou várias opções)

- [ ] Diminuição dos níveis de oxigénio
- [ ] Alteração dos batimentos cardíacos
- [ ] Vómitos
- [ ] Petéquias (Pequenos pontos vermelhos agrupados em diversas zonas do corpo)
- [ ] Sangramento nasal
- [ ] Prostração (Pouca reação a estímulos)
- [ ] Cansaço extremo
- [ ] Polipneia (Respiração rápida e ofegante)
- [ ] Hematomas no tórax (Derrame e acumulação de sangue comumente chamado de "nódoa negra")
- [ ] Fraturas das costelas
- [ ] Atelectasias (colapso do pulmão ou parte dele)
- [ ] Internamento hospitalar
- [ ] Outra: _____

3.9.2- Este(s) ocorreu(ram) antes, durante ou após a sessão de fisioterapia? *

(Selecionar uma ou várias opções)

- [ ] Antes
- [ ] Durante
- [ ] Após

3.9.3- Qual foi a sua frequência? *

- ◯ 1 vez
- ◯ 2-3 vezes
- ◯ Mais do que 4 vezes

4. Acesso e nível de Satisfação em relação à fisioterapia respiratória

(Selecionar uma ou várias opções)

4.1- Qual o nível de satisfação com o processo de fisioterapia, desde o encaminhamento até à alta? *

- ◯ Extremamente satisfeito
- ◯ Muito satisfeito
- ◯ Nem muito nem pouco satisfeito
- ◯ Pouco satisfeito
- ◯ Muito pouco satisfeito
- ◯ Nada satisfeito

4.2- Qual considera o grau de satisfação em relação à intervenção do fisioterapeuta ao longo da(s) sessão(ões)? *

- ◯ Extremamente satisfeito
- ◯ Muito satisfeito
- ◯ Nem muito nem pouco
- ◯ Pouco satisfeito
- ◯ Muito pouco satisfeito
- ◯ Nada satisfeito

4.2.1- Quais os aspetos que considera relevantes durante a sessão de intervenção da fisioterapia? *

(Selecionar uma ou várias opções)

- ◯ Intervenção do terapeuta durante a sessão
- ◯ Frequência das sessões
- ◯ Duração das sessões
- ◯ Conforto da criança
- ◯ Criança não chorar durante a intervenção
- ◯ Relação terapêutica (empatia com o fisioterapeuta)
- ◯ Contacto (em SOS) do fisioterapeuta fora das sessões
- ◯ Outra: _____

4.3- Considera que os fisioterapeutas deviam ser a primeira linha de contacto em casos de bronquiolite, antes de contactar o médico, saúde 24 ou de ir ao hospital? *

- ◯ Sim
- ◯ Não

4.4- Manteve contacto via e-mail ou via telefone fora das sessões com o fisioterapeuta responsável? *

- ◯ Sim
- ◯ Não

4.4.1- Se sim, considera que o fisioterapeuta manteve o contacto via e-mail ou via telefone assegurando o estado atual da criança? *

- ◯ Sim
- ◯ Não

4.4.2- Se não, qual o motivo para que não mantenha contacto? *

(Selecionar uma ou várias opções)

- ☐ Recusa do fisioterapeuta em dar os contactos pessoais
- ☐ Realizaram poucas sessões e não acharam necessário
- ☐ Contacta o médico sempre que é necessário
- ☐ Outra: _____

4.5- Que fatores que podem influenciar o acesso às sessões de fisioterapia? *
(Selecionar uma ou várias opções)

- ◯ Custos associados ao tratamento
- ◯ Custos associados às deslocações à clinica/instituição
- ◯ Falta de acesso a clínicas com essa especialidade na área de residência
- ◯ Falta de fisioterapeutas que se desloquem ao domicílio
- ◯ Falta de referenciação médica ou de outros profissionais de saúde
- ◯ Falta de conhecimento do próprio em relação à intervenção da fisioterapia
- ◯ Horário laboral dos pais
- ◯ Falta de apoio de familiares/amigos
- ◯ Barreira linguística (Não falar a língua portuguesa ou inglesa)
- ◯ Experiência negativa com sessões anteriores de fisioterapia respiratória
- ◯ Outra: _____

Muito obrigada pela sua participação!

Enviar Página 1 de 1 Limpar formulário

VII.b APPENDIX II - STATISTICAL ASSOCIATION TABLES

Table 10. Association between referral of the sessions and severity of bronchiolitis (n=56).

Referral	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Pediatrician	7 (12.5%)	**18 (32.1%)**	2 (3.6%)	0.685
Physiotherapist	**5 (8.9%)**	3 (5.4%)	0 (0%)	
Self decision	2 (3.6%)	**5 (8.9%)**	0 (0%)	
Friends	1 (1.8%)	**4 (7.1%)**	0 (0%)	
Family	**2 (3.6%)**	1 (18%)	0 (0%)	
Family doctor	**2 (3.6%)**	1 (1.8%)	0 (0%)	
Nurse	**1 (1.8%)**	**1 (1.8%)**	0 (0%)	
Intensive care unit doctor	0 (0%)	**1 (1.8%)**	0 (0%)	

*p<0.05; All values are counted per line

Table 11. Association between frequency of the sessions and severity of bronchiolitis (n=56).

Frequency of chest physiotherapy	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
1-2	14 (25%)	**18 (32.1%)**	1 (1.8%)	0.156
3-4	3 (5.4%)	**13 (23.2%)**	0 (0%)	
5 or more	**3 (5.4%)**	**3 (5.4%)**	1 (1.8%)	

*p<0.05; All values are counted per line

Table 12. Association between localization of the sessions and severity of bronchiolitis (n=56).

Localization of chest physiotherapy	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Inpatient at the hospital	1 (1.8%)	**5 (8.69%)**	0 (0%)	0.519
Outpatient at clinic	12 (21.4%)	**19 (33.9%)**	0 (0%)	0.395
Patient's residence	9 (16.1%)	**10 (17.9%)**	2 (3.6%)	0.122
Hospitalization and outpatient	0 (0%)	**3 (5.4%)**	0 (0%)	0.362
Outpatient at hospital	0 (0%)	**2 (3.6%)**	0 (0%)	0.558

*p<0.05; All values are counted per line

Table 13. Association between benefits of chest physiotherapy and severity of bronchiolitis (n=56).

Benefits of chest physiotherapy	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Reduction in lung secretions				
Yes	15 (26.8%)	**30 (53.6%)**	2 (3.6%)	0.485
No	5 (8.9%)	4 (7.1%)	0 (0%)	
Reduction in nasal obstruction				
Yes	17 (30.4%)	**21 (37.5%)**	1 (1.8%)	0.174
No	3 (5.4%)	13 (23.2%)	1 (1.8%)	
Reduction in cough frequency				
Yes	12 (21.4%)	**16 (28.6%)**	1 (1.8%)	0.699
No	8 (14.3%)	18 (32.1%)	1 (1.8%)	
Improvement in sleep quality				
Yes	11 (19.6%)	**14 (25%)**	1 (1.8%)	0.697
No	9 (16.1%)	20 (35.7%)	1 (1.8%)	
Improvement in diet				
Yes	**10 (17.9%)**	7 (12.5%)	2 (3.6%)	**0.010***
No	10 (17.9%)	27 (48.2%)	0 (0%)	
Reduction in hospitalization time				
Yes	0 (0%)	**2 (3.6%)**	1 (1.8%)	**0.056***
No	20 (35.7%)	32 (57.1%)	1 (1.8%)	
Improvement in quality of life				
Yes	8 (14.3%)	**14 (25%)**	2 (3.6%)	0.308
No	12 (21.4%)	20 (35.7%)	0 (0%)	
Improvement in heart rate				
Yes	2 (3.6%)	**4 (7.1%)**	0 (0%)	1.000
No	18 (32.1%)	30 (53.6%)	2 (3.6%)	
Improvement in oxygen levels				

Yes	3 (5.4%)	**8 (14.3%)**	0 (0%)	0.685
No	17 (30.4%)	26 (46.4%)	2 (3.6%)	
Avoidance of hospitalization				
Yes	4 (7.1%)	**9 (16.1%)**	0 (0%)	0.851
No	16 (28.6%)	25 (44.6%)	2 (3.6%)	
No benefits				
Yes	0 (0%)	**1 (1.8%)**	0 (0%)	1.000
No	20 (35.7%)	33 (58.9%)	2 (3.6%)	

*p<0.05; All values are counted per line

Table 14. Association between the explanation of chest physiotherapy techniques and severity of bronchiolitis (n=56).

Explanation of chest physiotherapy techniques	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Yes	19 (33.9%)	**32 (57.1%)**	2 (3.6%)	1.000
No	1 (1.1%)	2 (3.6%)	0 (0%)	

*p<0.05; All values are counted per line

Table 15. Association between usefulness of physiotherapy techniques and severity of bronchiolitis (n=56).

Usefulness of physiotherapy techniques	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Yes	19 (33.9%)	**32 (57.1%)**	2 (3.6%)	1.000
No	1 (1.8%)	2 (3.6%)	0 (0%)	

*p<0.05; All values are counted per line

Table 16. Association between techniques applied by the physiotherapist and severity of bronchiolitis (n=56).

Most used techniques by the physiotherapist	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Retrograde rhinopharyngeal clearance				
Yes	11 (19.6%)	**19 (33.9%)**	2 (3.6%)	0.628
No	9 (16.1%)	15 (26.8%)	0 (0%)	
Percussion				
Yes	8 (14.3%)	**14 (25%)**	1 (1.8%)	

No	12 (21.4%)	20 (35.7%)	1 (1.8%)	1.000
Nasal wash				
Yes	7 (12.5%)	**11 (19.6%)**	0 (0%)	1.000
No	13 (23.2%)	23 (41.1%)	2 (3.6%)	
Nasal wash (Place drops of saline in each nostril)				
Yes	1 (1.8%)	**3 (5.4%)**	0 (0%)	1.000
No	19 (33.9%)	31 (55.4%)	2 (3.6%)	
Postural drainage				
Yes	**1 (1.8%)**	0 (0%)	0 (0%)	0.393
No	19 (33.9%)	34 (60.7%)	2 (3.6%)	
Slow expiration techniques				
Yes	6 (10.7%)	**14 (25%)**	1 (1.8%)	0.704
No	14 (25%)	20 (35.7%)	1 (1.8%)	
Forced expiration techniques				
Yes	1 (1.8%)	**6 (10.7%)**	0 (0%)	0.419
No	19 (33.9%)	28 (50%)	2 (3.6%)	
Vibration				
Yes	1 (1.8%)	**2 (3.6%)**	0 (0%)	1.000
No	19 (33.9%)	32 (57.1%)	2 (3.6%)	

*p<0.05; All values are counted per line

Table 17. Association between adverse events and severity of bronchiolitis (n=56).

Adverse events	**Severity of bronchiolitis**			**p-value**
	Mild	**Moderate**	**Severe**	
Changes in heart rate				
Yes	**1 (1.8%)**	0 (0%)	0 (0%)	0.393
No	19 (33.9%)	34 (60.7%)	2 (3.6%)	
Extreme tiredness				
Yes	2 (3.6%)	**6 (10.7%)**	0 (0%)	

No	18 (32.1%)	28 (50%)	2 (3.6%)	0.777
Petechiae				
Yes	**1 (1.8%)**	0 (0%)	0 (0%)	0.393
No	19 (33.9%)	34 (60.7%)	2 (3.6%)	
Vomiting				
Yes	**2 (3.6%)**	1 (1.8%)	0 (0%)	0.595
No	18 (32.1%)	33 (58.9%)	2 (3.6%)	

*p<0.05; All values are counted per line

Table 18. Association between relevant aspects about the session and severity of bronchiolitis (n=56).

About the session (relevant aspects)	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Comfort of the child				
Yes	19 (33.9%)	**27 (48.2%)**	1 (1.8%)	0.101
No	1 (1.8%)	7 (12.5%)	1 (1.8%)	
SOS contact of the physiotherapist outside the sessions				
Yes	10 (17.9%)	**12 (21.4%)**	1 (1.8%)	0.552
No	10 (17.9%)	22 (39.3%)	1 (1.8%)	
Absence of crying during the sessions				
Yes	1 (1.8%)	**4 (7.1%)**	0 (0%)	0.702
No	19 (33.9%)	30 (53.6%)	2 (3.6%)	
Session's duration				
Yes	2 (3.6%)	**7 (12.5%)**	0 (0%)	0.620
No	18 (32.1%)	27 (48.2%)	2 (3.6%)	
Session´s frequency				
Yes	1 (1.8%)	**11 (19.6%)**	0 (0%)	**0.047***
No	19 (33.9%)	23 (41.1%)	2 (3.6%)	
Physiotherapist intervention				
Yes	15 (26.8%)	**26 (46.4%)**	2 (3.6%)	1.000
No	5 (8.9%)	8 (14.3%)	0 (0%)	

Therapeutic relationship				
Yes	17 (30.4%)	**27 (48.2%)**	2 (3.6%)	0.817
No	3 (5.4%)	7 (12.5%)	0 (0%)	

*p<0.05; All values are counted per line

Table 19. Association between access to chest physiotherapy sessions and severity of bronchiolitis (n=56).

Access to chest physiotherapy sessions	Severity of bronchiolitis			p-value
	Mild	Moderate	Severe	
Language barrier				
Yes	**3 (5.4%)**	2 (3.6%)	0 (0%)	0.460
No	17 (30.4%)	32 (57.1%)	2 (3.6%)	
Costs of treatment				
Yes	14 (25%)	**21 (37.5%)**	1 (1.8%)	0.800
No	6 (10.7%)	13 (23.2%)	1 (1.8%)	
Costs associated with the travelling to the clinic/health unit				
Yes	2 (3.6%)	**3 (5.4%)**	0 (0%)	1.000
No	18 (32.1%)	31 (55.4%)	2 (3.6%)	
Negative experiences of previous chest physiotherapy sessions				
Yes	**8 (14.3%)**	5 (8.9%)	0 (0%)	0.094
No	12 (21.4%)	29 (51.8%)	2 (3.6%)	
Lack of access to specialist clinics around residence				
Yes	7 (12.5%)	**9 (16.1%)**	0 (0%)	0.771
No	13 (23.2%)	25 (44.6%)	2 (3.6%)	
Lack of support from family and friends				
Yes	0 (0%)	**3 (5.4%)**	0 (0%)	0.362
No	20 (35.7%)	31 (55.4%)	2 (3.6%)	
Lack of knowledge about chest physiotherapy				
Yes	9 (16.1%)	**11 (19.6%)**	1 (1.8%)	0.544
No	11 (19.6%)	23 (41.1%)	1 (1.8%)	
Lack of physiotherapists at home				

Yes	2 (3.6%)	**6 (10.7%)**	1 (1.8%)	0.306
No	18 (32.1%)	26 (50%)	1 (1.8%)	
Lack of referral from a doctor or other health professional				
Yes	7 (12.5%)	**13 (23.2%)**	1 (1.8%)	1.000
No	13 (23.2%)	21 (37.5%)	1 (1.8%)	
Parents' working hours				
Yes	3 (5.4%)	**7 (12.5%)**	0 (0%)	0.817
No	17 (30.4%)	27 (48.2%)	2 (3.6%)	

*p<0.05; All values are counted per line