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The attitudes, experiences, and concerns of parents of children aged under three years old, with lower respiratory tract infections, regarding respiratory management.

Danielle Foot

A Research Report submitted to the Faculty of Health Sciences, University of Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Masters in Physiotherapy.

Johannesburg, 2023

DECLARATION

I, Danielle Foot declare that this Research Report is my own, unaided work. It is being submitted for the Degree of Masters in Physiotherapy at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other university.

Danielle Foot
Name of candidate



Signature of candidate

9th day of June 2023 in Johannesburg

DEDICATION

This Research Report is dedicated to all the parents of my paediatric patients, and the co-workers that inspired and supported me during my research journey. To my husband, for your endless support and encouragement. To my family who always created a safe environment for me to grow.

ABSTRACT

Introduction: Parents are key members in the treatment process of their child's lower respiratory tract infection (LRTI). Despite the availability of literature on medical management and physiotherapy techniques for children with LRTIs, the perspectives of their parents towards the condition and the treatment remain unknown. This study aimed to explore the attitudes, experiences, and concerns of parents of children aged under three years old, with LRTIs, regarding the respiratory management of their child.

Methods: Parents of children aged under three with a LRTI from both in-and-out patient departments participated in a qualitative exploratory study with semi-structured individual interviews. Interviews were recorded, transcribed and data were analysed using the deductive approach. Raw quotes were extracted from the interviews to highlight themes identified.

Results: Data saturation was reached at 12 interviews. The mean age of participants was 34.3 (SD ± 4.9) years, and the children had a mean age of 18.8 (SD± 6.5) months. All participants were the mother of the child. The frequent codes that emerged formed sub-themes and these have led to an encompassing theme. The encompassing theme was labelled "It is tough taking care of a sick child". Three important sub-themes were identified namely: personal challenges; treatment options and parent understanding. Some important categories that were highlighted included the implication of the feeding and sleeping routine, financial implications, physiotherapy management, involvement of the healthcare team and the different home management strategies to take care of a sick child.

Conclusion: This is the first study to focus on the parent's perspective of their own management and those of other healthcare professionals during the respiratory management of their child. Especially treatment other than antibiotic use such as chest physiotherapy. Despite the cardinal role parents play in the management of their child's condition they still felt ineffective and had a stressful experience taking care of their children during this period. Specialised healthcare professionals can positively impact the experience of the parent's ability to take care of their sick child by involving the families and offering appropriate and timeous advice. Comprehending the parent's understanding, expectation and previous experience of the condition can be used as a starting point to establish further treatment goals.

Keywords: chest physiotherapy; paediatric physical therapy; lower respiratory tract infection; medical management, parent perspective, caregiver advice

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LIST OF ABBREVIATIONS

AAP: American Academy of Pediatrics

ACBT: Active cycle of breathing techniques

ACT: Airway clearance techniques

bpm: Breaths per minute

CF: Cystic Fibrosis

EC: Emergency Centre

FET: Forced expiratory techniques

$Fi0_2$: Fraction of inspired oxygen

GP: General practitioner

LRTI: Lower respiratory tract infection

NICU: Neonatal intensive care unit

PCR: Polymerase chain reaction

PD: Postural drainage

PEDro: Physiotherapy Evidence Database

PEP: Positive expiratory pressure

pH: Potential hydrogen

PICU: Paediatric intensive care unit

RCT: Randomised controlled trial

RR: Respiratory rate

RSV: Respiratory Syncytial virus

RVP Fast: Respiratory viral panel Fast

$Sp0_2$: Oxygen saturation

V/Q: Ventilation-perfusion ration

WHO: World Health Organization

LIST OF OPERATIONAL DEFINITIONS

Lower respiratory tract infection: An umbrella term that can be defined as infections usually of bacterial or viral origin, involving the respiratory tract below the level of the larynx. This includes bronchiolitis, bronchitis, bronchopneumonia, and pneumonia Boloursaz et al. 2013.

Attitudes: The mental posture we form as we engage in a mental or physical task and can become manifest in our physical demeanour (Cambridge University Press 2023).

Experiences: The fact or state of having been affected by or gained knowledge through direct observation or participation (Merriam-Webster 2023).

Concerns: A troubled or engrossed state of mind because of personal interest, relation or affection (Cambridge University Press 2023.

Perspectives: A perspective is a mental interpretation of an observed action or presented concept. (This encompasses attitudes, experiences and concerns) (Quora 2023).

Chest Physiotherapy: An airway clearance technique to clear secretions from the lungs, including but not limited to nebulisation, postural drainage, percussion, vibrations and nasopharyngeal suctioning. When referring to manual chest physiotherapy it might include both manual and mechanical treatments (Morrow 2019).

Chapter 1 INTRODUCTION

1.1 BACKGROUND

The presence of LRTIs are significant contributors to hospitalisation among infants and paediatric patients which applies to South Africa as well as other countries worldwide (Zar, Nduru, Stadler, Gray, Barnett, Lesosky, Myer & Nicol 2020; Kyu, Pinho, Wagner, Brown, Bertozzi-Villa, Charlson, Coffeng & Dandona 2016; Zar & Ferkol 2014; Nair, Nokes, Gessner, Dherani, Madhi, Singleton, O'Brien & Roca 2010). One thousand three hundred and one children were hospitalised between January 2015 and June 2015 with a LRTI in Red Cross War Memorial Children's Hospital in Cape Town, South Africa (Corten & Morrow 2020).

Lower respiratory tract infection is an umbrella term and can be defined as infections usually of bacterial or viral origin, involving the respiratory tract below the level of the larynx. This includes bronchiolitis, bronchitis, bronchopneumonia, and pneumonia (Boloursaz, Lotfian, Aghahosseini, Cheraghvandi, Khalilzadeh, Farjah & Boloursaz 2013). Most LRTIs are of viral origin including, but not limited to, Respiratory Syncytial virus (RSV), Influenza virus, Parainfluenza virus, Rhinovirus and Adenovirus (Müller-Pebody, Edmunds, Zambon, Gay & Crowcroft 2002). The most prevalent causative factor of LRTIs, bronchiolitis specifically, is the RSV (Nair et al. 2010; Simoes 1999).

The severity of LRTIs can vary from illness requiring self-medicating at home to those that require hospital admission. A recent study by Mirkarimi, Alisamir, Saraf, Heidari, Barouti and Mohammadi (2020) identified that the mean age of paediatric LRTI patients requiring hospital admission, was below one year of age (50.8%). Most children have developed anti-bodies against RSV at the age of three years, but life-long immunity is not assured (Simoes 1999). Respiratory viruses affect and damage the epithelium of conducting airways and distal alveoli, which leads to respiratory compromise as this is the area where gas exchange occurs (Pham, Nguyen, Tran & Phung 2020). Irritation of alveolar epithelium can lead to inflammation and necrosis, thus causing excess mucus production. This excess mucus production causes nasal congestion, rhinorrhoea, coughing, wheezing, increased breathing effort and often fever (Pham et al. 2020). The combination of narrower bronchioles, ciliary dyskinesia, thicker viscosity and an increased amount of pulmonary secretions can further impact the physiological and physical airway clearance ability (Fink 2007).

The medical management of LRTIs largely depends on the symptom severity of the patient. Important factors to evaluate are the oxygenation and hydration status, this will guide the protocol if the patient needs to be admitted to hospital (Mallory, Shay, Garrett & Bordley 2003). Nebulising is a modality frequently used in treating bronchiolitis (Ralston, Lieberthal, Meissner, Alverson, Baley, Gadomski, Johnson & Light 2014). Nebulisation should not be used routinely, but rather based on the patient's needs.

An over-production of mucus, altered mucus consistency, or narrowed airways can render the normal mucociliary mechanism ineffective in non-healthy patients (Hess 2001). Paediatric patients with LRTIs are frequently referred for chest physiotherapy (Morrow 2019). Chest physiotherapy can facilitate the removal of retained secretions (Volsko 2013), to improve breathing effort and gaseous exchange (de Boeck, Vermeulen Vreys, Moens & Proesmans 2008). Chest physiotherapy can consist of percussions, nebulisation, postural drainage (de Boeck et al. 2008) and nasopharyngeal suctioning (Argent & Morrow 2004). Suctioning is frequently performed after chest physiotherapy to remove loosened secretions (Morrow & Argent 2008), especially in children with a poor cough reflex and inability to effectively blow their nose, especially those under two years. (Morrow 2019). In clinical practice, parents of children with LRTIs are often anxious and portray a negative attitude towards chest physiotherapy, because nasopharyngeal suctioning might be a traumatic experience for these children.

The active cycle of breathing technique (ACBT) can also be demonstrated to children from two years of age with supervision, enhanced by using a blower toy (Fink 2007). Mobilisation in the form of play, incorporating aerobic exercises, can be used as an adjunct to manual treatment to facilitate airway clearance (Morrow 2019). It is thus recommended that after evaluation, a treatment plan should be individualised and not routinely prescribed. There is a paucity of literature regarding the psychological effect of chest physiotherapy on children with LRTIs, or the perspective of the parents towards it. To the knowledge of the researcher no studies on the perception of the parent regarding chest physiotherapy for LRTI have been conducted. The routine referral of children with LRTIs for chest physiotherapy has the potential to be costly and it can be a traumatic experience (de Boeck et al. 2008; Krause & Hoehn 2000).

The stress factor of a sick child can be addressed by applying the family-centred care approach. Family-centred care is a theoretical framework involving parents in the care and planning process of their child's treatment (Shields, Pratt, Davis & Hunter 2007). Shields et al (2007) found that parent-involvement can reflect in an increased participation of the child in their treatment activities. There is a direct relationship between the anxiety levels of the parent to those of the child (Cameron, Bond & Pointer 1996). Attitudes and actions from the healthcare team can influence the parents' concerns and engagement either positively or negatively (Power & Franck 2008). Considering the different presentations and treatment options available, each patient and parent should be treated individually and in co-ordinance with the rest of the healthcare team.

1.2 PROBLEM STATEMENT

Evidence regarding LRTI aetiology, pathophysiology, medical treatment and chest physiotherapy techniques are well established. In contrast, the perspective of the parents towards this condition and towards respiratory chest physiotherapy treatment specifically, is lacking. We hypothesise that parents will describe anxiety towards the diagnosis of LRTIs for their children and lack knowledge and self-confidence to manage this condition at home. The involvement of parents in the treatment cycle is especially important. If no attention is given to the parent's attitudes and concerns, an uncertain reaction from both parent and child towards chest physiotherapy might continue.

1.3 RESEARCH QUESTION

What are the attitudes, experiences, and concerns of parents of children aged under three years old, with LRTIs, regarding respiratory management?

1.4 AIMS AND OBJECTIVES

1.4.1 Aims

To explore the attitudes, experiences, and concerns of parents of children aged under three years old, with LRTIs, regarding respiratory management.

1.4.2 Objectives

1.4.2.1 To describe the understanding and experiences of parents about their children's LRTI condition.

1.4.2.2 To explore the attitudes/experiences/concerns parents have towards their children's respiratory management, including chest physiotherapy.

1.4.2.3 To explore additional information parents would like to receive about LRTIs in their children.

1.5 SIGNIFICANCE

By understanding the perspective, expectation and previous experience of a parent whose child has a LRTI, specific education and management skills regarding this condition can be given on a level that the parent will comprehend and find useful. Common questions can be answered in a way that will empower the parent to manage the condition without unnecessary medical intervention. An information pamphlet/video can be created to further assist parents in this regard. Parents will also understand the impact that their own experience has on the attitude or reaction of the child towards the treating healthcare professional. By including in-and-out-patients in this study, the results can be generalised to both populations.

Chapter 2 LITERATURE REVIEW

2.1 INTRODUCTION

Despite the availability of literature on medical management and chest physiotherapy techniques for children with LRTIs the perspectives of their parents towards the condition and the techniques remain unknown. The aim of this review is to provide an overview of available literature regarding the respiratory management of children with LRTIs, which will provide the context for the perspectives parents have towards their children's respiratory management, including chest physiotherapy.

2.2 SEARCH STRATEGY

Articles describing paediatric populations between birth and 18 years old with LRTIs. Non-ventilated patients were prioritised, but adult studies, ventilated patients and Cystic Fibrosis (CF) patients were also considered where appropriate, although it is not the focus of this study. Articles in the English language published from inception and May 2022 were considered. This review was conducted by using the following electronic databases: PubMed, Physiotherapy Evidence Database (PEDro), ClinicalKey and Cochrane Database of Systematic Reviews. Search terms included chest physiotherapy; physical therapy; paediatric physiotherapy; airway clearance techniques; lower respiratory tract infection; medical management; parent perspective; parent involvement, emergency room, parent expectation, caregiver advice.

2.3 BACKGROUND AND PREVALENCE OF LOWER RESPIRATORY TRACT INFECTIONS

The prevalence of LRTIs are significant contributors to hospitalisation among paediatric patients worldwide, including South Africa (Zar et al. 2020; Kyu et al. 2016; Zar & Ferkol 2014; Nair et al. 2010). One thousand three hundred and one children were hospitalised between January 2015 and June 2015 with a LRTI in a hospital in Cape Town, South Africa. Of these children, those identified with bronchiolitis had an average hospital stay of 2.9 days, and those identified with non-specific LRTIs, such as pneumonia, had an average duration of stay of 5.4 days (Corten & Morrow 2020).

Lower respiratory tract infection is defined as an infection involving the respiratory tract below the level of the larynx. Including bronchiolitis, bronchitis, bronchopneumonia,

and pneumonia (Boloursaz et al. 2013). Most LRTIs are of viral origin including, but not limited to, RSV, Influenza virus, Parainfluenza virus, Rhinovirus and Adenovirus (Müller-Pebody et al. 2002). The most prevalent causative pathogen is the RSV (Nair et al. 2010; Simoes 1999).

Evidence exists on the interaction between RSV and pneumococcal infections. This co-occurrence is seen in children hospitalised with RSV-associated pneumonia not in milder bronchiolitis cases treated in the out-patient department (White, Madhi, Jeena, Zar, Morrow, Masekela, Risenga & Green 2016). Pneumonia is the leading cause of death in children under five years of age. An incidence rate of 0.27 episodes per child-years was established in low to middle income countries in Africa (Walker, Rudan, Liu, Nair, Theodoratou, Bhutta, & Black 2013)

A LRTI can become severe and lead to hospital admission. The hospitalisation rate for term children with RSV is 5.2 per 1000 children (Stevens, Sinkin, Hall, Maniscalco & McConnochie 2000). A recent study by Mirkarimi et al (2020) identified that the mean age of paediatric LRTI patients requiring hospital admission, was below one year of age (50.8%). Most children have developed anti-bodies against RSV at the age of three, but life-long immunity is not assured (Simoes 1999). Havdal, Boas, Bekkevold, Kran, Rojahn, Stordal, Debes and Dollner (2022), established an incidence rate of RSV as 13.3 per 1000 children in Norway under one year of age. In the Western Cape in South Africa, Zar et al (2020) performed a longitudinal study. They recorded 851 cases of LRTI out of 1143 infants leading to an incidence of 0.41 episodes per child-year (Zar et al. 2020). Despite improvements in the respiratory management of LRTIs, it remains an important health concern in children under five years in South Africa (Zar et al. 2020; Corten & Morrow 2020; Nair et al. 2010).

A recent study by Tsitsiklis, Osborne, Kamm, Williamson, Kalantar, Dudas, Caldera and Lyden (2022) investigated the pathogenic microbes causing LRTI in children requiring mechanical ventilation. The authors found that the RSV was the most prevalent pathogen detected equating to 46% of the 276 patients included in the study. This study was performed in the USA on children aged between 17 days and 17 years old. In children aged under six months the RSV was most prevalent, whereas in children six months to two years the Rhinovirus was more prevalent. These pathogens' detection decreased with age (Tsitsiklis et al. 2022). This is also applicable in South

Africa, as seen in a study by White et al 2016. This study was performed in hospitals in four different provinces on children under five years with a LRTI. It was established that viral pathogens were more prevalent than bacterial pathogens. Three viruses were identified namely, RSV, Adenovirus and Human rhinovirus (White et al. 2016).

2.4 PATHOLOGY

Respiratory viruses affect and damage the epithelium of conducting airways and distal alveoli, this is the area where gas exchange occurs (Pham et al. 2020). The upper airways are affected first and within a few days the lower respiratory tract is affected (van Woensel, van Aalderen & Kimpen 2003). Irritation of alveolar epithelium can lead to inflammation and necrosis thus excess mucus production. Causing nasal congestion, rhinorrhoea, coughing, wheezing, increased breathing effort and often fever (Pham et al. 2020).

Swelling causes narrowing and obstruction of smaller airways (bronchioles) combined with air-trapping by mucus plugs (Bontemps, van Woensel & Bos 2013). The combination of narrower bronchoconstriction, ciliary dyskinesia, thicker viscosity and an increased amount of pulmonary secretions can further impact the physiological and physical airway clearance ability (Fink 2007). Children under the age of eight years have smaller airways and fewer alveoli leading to further hypoventilation and poor gas exchange (Bontemps et al. 2013). Infants under the age of two months rely on breathing with their nose while feeding. Feeding might be impacted more in these children than those that can coordinate breathing and swallowing with a congested nose (Chirico & Beccagutti 2010).

2.5 CLINICAL PRESENTATION AND DIAGNOSIS

The diagnosis of LRTIs is mostly made based on clinical presentation. For identification of specific pathogens different methods exist. Firstly, the Multiplex Polymerase chain reaction (PCR) which can identify different viruses in a single tube in a short timeframe (Caliendo 2011). Secondly there is the xTAG Respiratory viral panel Fast (RVP Fast) which is based on nucleic acid identification from different respiratory viruses. Samples from bronchoalveolar lavages, nasal aspirates, nasopharyngeal swabs, and nasopharyngeal aspirates can be used for both methods. The xTAG RVP Fast was found to have superior sensitivity when compared to the conventional PCR test

(Babady, Mead, Stiles, Brennan, Li, Shuptar, Stratton &Tang 2012). In South Africa RSV rapid antigen and the multiplex PCR test are commonly used for the detection of the RSV (Newman, Tshabalala, Mabunda, Nkosi & Carelson 2020).

Chest radiography (chest x-ray) is frequently used for diagnosis of pneumonia of either viral or bacterial origin. It can also be used to evaluate the effectiveness of a treatment. On x-rays, pneumonia is classified as alveolar involvement, infiltrates, or alveolar occlusion, according to the World Health Organization (WHO). This diagnostic tool has a sensitivity of 93% but poor distinction between viral or bacterial pneumonia (Cherian, Mulholland, Carlin, Ostensen, Amin, de Campo, Greenberg, Lagos 2005; Zar, Andronikou & Nicol 2017).

2.6 MEDICAL MANAGEMENT

The medical management of LRTIs largely depends on the symptom severity of the patient. Important factors to evaluate are the oxygenation and hydration status, this will guide the protocol if the patient needs to be admitted to hospital (Mallory et al. 2003). Current best practices suggest supplemental oxygen in hospital settings if oxygen saturation levels fall below 90%-92%. Humidified low-flow oxygen delivered via nasal prongs was found to be effective treatment (Zar, Madhi, White, Masekela, Risenga, Lewis, Feldman & Morrow 2016).

Supplemental oxygen proves to be effective for most affected infants, but severe cases may lead to invasive ventilation (Wiegers, van Nijen, van Woensel, Bem, de Jong & Calis 2019). In a study by Bloomfield, Dalton, Karleka, Kesson, Duncan & Isaacs (2004) they observed 1795 children with RSV between the age of 0-14 years of age over a four-year period. Only 10% of these children needed invasive ventilation. This percentage should be interpreted with caution in relation to this review due to the wide age range. Guidelines and indications for mechanical ventilation are available but the final decision is still contingent on the treating physician. Frequent apnoea spells with a pH of <7.20, $Sp0_2$ <85% with a fraction of inspired oxygen of >60 ($Fi0_2$ 0.6) and an altered mental state are key indicators for mechanical ventilation (Tasker 2015; Rakshi & Couriel 1994).

Nebulising is a modality frequently used in treating bronchiolitis. Current evidence as cited in the American Academy of Pediatrics (AAP) showed little improvement in length of stay or oxygen requirement when comparing the use of nebulisation with either bronchodilators, hypertonic saline, or corticosteroids. These solutions were evaluated in isolation and not as a combination of treatment (Ralston et al. 2014). In contrast, a recent meta-analysis found superior results when nebulising with 3% saline compared to 0.9% saline in patients with acute bronchiolitis. These studies were mainly performed in Asian countries on children with a mean age of 6,5 months. Length of hospital stay and symptom severity was influenced positively (Hsieh, Chen, Su & Chen 2020). The results of this study can be applied to South Africa as the income level of the country as well as the age of study participants are similar. Further larger, good quality studies are needed to establish nebulisation guidelines.

Nebulisation should not be used routinely, but rather based on the patient's needs. Other frequently used modalities such as adrenaline nebulisation and antibiotics were found to be ineffective when prescribed routinely for treatment of bronchiolitis. These modalities should be reserved for use only with specific secondary bacterial infections (Little, Francis, Stuart, O'Reilly, Thompson, Becque, Hay & Wang 2021; Ralston et al. 2014). Most literature and recommendation for LRTIs are based on the emergency centre (EC) or in-hospital settings. A gap in the literature exists on guidelines and effectiveness of treatment for out-patients diagnosed with LRTIs.

2.7 PHYSIOTHERAPY MANAGEMENT

Paediatric patients with LRTIs are frequently referred for chest physiotherapy (Morrow 2019). A normal mucociliary mechanism is responsible for moving mucus in a central upward direction by coordinated ciliary movement (de Boeck et al. 2008). An over-production of mucus, altered mucus consistency, or narrowed airways can render this mechanism ineffective in non-healthy patients (Hess 2001). Under normal circumstances secretions can be cleared from the central area up to the six or seventh bronchial generation with a strong cough (Frownfelter, Dean, Stout, Kruger & Anthony 2022).

In young sick patients, continuous coughing might be ineffective and lead to fatigue or cause partial bronchoconstriction, due to excessive pressure build-up (de Boeck et al. 2008; Fink 2007). Chest physiotherapy can facilitate the removal of retained secretions

(Volsko 2013), to improve breathing effort and gaseous exchange (de Boeck et al. 2008). Chest physiotherapy can consist of percussions, nebulisation, postural drainage (de Boeck et al. 2008) and nasopharyngeal suctioning (Argent and Morrow 2004).

Morrow (2019) labelled these airway clearance techniques in her state-of-the-art review as airway clearance therapy (ACT). Airway clearance techniques can be classified as either active or passive techniques. Passive techniques are manual techniques performed by the physiotherapist and can include, but are not limited to, percussions, positioning and vibrations. Active techniques require active participation from the patient including but not limited to; ACBTs, positive expiratory pressure (PEP) techniques and autogenic drainage (Morrow 2019).

In a systematic review by Chaves, Freitas, Santino, Nogueira, Fregonezi & Mendonça (2019) the authors summarised the techniques differently as either modern, conventional, or instrumental techniques. Conventional techniques aim to aid in mucociliary clearance; including techniques such as percussion, vibration, postural drainage (PD), coughing and huffing (Yousefnia-Darzi, Hasavari, Khaleghdoost, Kazemnezhad-Leyli & Khalili 2016; Flude, Agent & Bilton 2012; Yang, Yan, Yin, Wang, Wu, Liu & Dong 2010; Main, Prasad & van der Schans 2005). Modern techniques use turbulations in flow to mobilise secretions via techniques such as forced expiration, ACBT and autogenic drainage (Button & Button 2013; Yang et al. 2010; Main et al. 2005).

Instrumental techniques can be used in combination with the above mentioned, such as non-invasive ventilation, (Button, Wilson, Dentice, Cox, Middleton, Tannenbaum, Bishop & Cobb 2016; Holland, Denehy, Ntoumenopoulos, Naughton & Wilson 2003) incentive spirometry and PEP. These techniques assist to increase lung volume thereby assisting in gaseous exchange (Britto, Brant & Parreira 2014; Restrepo, Wettstein, Wittnebel & Tracy 2011).

2.7.1 Postural drainage

PD is a principle utilising gravity to assist the mobilisation of secretions and improving the ventilation/perfusion ratio (V/Q) to a specific area of the lung (Lupton-Smith, Argent, Rimensberger & Morrow 2014). This concept has been in practice since 1901 when William Ewart first presented the idea (Ewart 1901). A study performed by Lannefors

and Wollmer compared forced expiratory techniques (FET) in: PD and thoracic expansion exercises, to PEP, and to physical exercise. There was no statistically significant difference between the groups, but the PD and thoracic expansion exercises group drained more from the dependent lung in seven out of the nine participants (Lannefors & Wollmer 1992). This study was executed 30 years ago, the PD was not evaluated in isolation but in combination with thoracic expansion exercises and the participants included were adults. These factors should be considered when applying this treatment technique in paediatric patients.

A more recent study performed by Berney, Denehy and Pretto (2004) found superior results in manual hyperinflation of patients between 23 and 79 years of age. The patients were evaluated in a head down position compared to a flat side-lying position. This study was performed on mechanically ventilated adult patients and should thus be interpreted with attentiveness with regards to the context of this study (Berney et al. 2004). In contrast with adults, where the dependent lung is the preferred method of ventilation, in children the response to positional changes is inconsistent (Lupton-Smith et al. 2014). This proves the need for individualised, paediatric treatment rather than generalised prescription (Button & Button 2013). No other recent studies investigating PD in paediatric patients with a LRTI, were identified.

2.7.2 Percussions and vibrations

Percussions and vibrations are frequently used modalities in chest physiotherapy. These techniques cause a turbulence in the bronchial airways affecting the secretions by reducing the viscosity for ease of expectorating, either actively or via endotracheal suctioning (Morrow 2019). A study done in a paediatric intensive care unit (PICU) environment found manual vibrations alternating between compression and oscillation to be effective in increasing expiratory flow rate, thereby assisting sputum clearance in mechanically ventilated and sedated children (Gregson et al. 2012). Percussion therapy is rarely evaluated in isolation or in the paediatric population. Available studies include participants up to the age of 18 (Corten & Morrow 2020; Morrow 2019) whereas our study population is up to three years of age.

A randomised controlled trial (RCT) in Africa, Cairo evaluated standard pneumonia treatment with chest physiotherapy versus no chest physiotherapy. Both groups included 25 participants up to the age of five years. Chest physiotherapy included 20

minutes of percussions, vibrations, PD, thoracic squeezing, cough stimulation and suctioning if needed. Three significant differences in favour of the chest physiotherapy group resulted. Namely, time to clinical resolution was four versus seven days, greater improvement in respiratory rate (RR) (30 versus 40 bpm) and peripheral oxygenation (93% to 98% versus 93% to 95%) (Abdelbasset & Elnegamy 2015). Although percussions were not evaluated in isolation no other modalities were included in chest physiotherapy and the age group is more appropriate than other studies. The contra-indications for percussions and vibrations in children are well known although the effectiveness and safety for use is still unknown (Morrow 2019). Further research in this field is needed.

2.7.3 Breathing exercises

Breathing exercises is an umbrella term for techniques that increase lung recruitment and thus increase expiratory flow. Techniques include ACBT, thoracic expansion exercises, PEP and FET (Morrow 2015). These techniques are believed to assist in sputum clearance where there is retained secretions. ACBT consists of a cycle of thoracic expansion exercises, FET, and relaxed/diaphragmatic breathing. These techniques can be incorporated during play by using any activity requiring blowing (windmill, big bad wolf) and huffing such as steaming up a mirror. ACBTs can be demonstrated to children from two years of age with supervision (Fink 2007).

A systematic review and meta-analysis evaluated the short-term effects of ACBT versus ten other comparators. Conventional chest physiotherapy, PEP and a control group being the most common practices. Twenty-four articles were included, only two evaluated children (under 12 years old), nine evaluated both children and adults, and the remaining articles, adults only. The most common outcome measured being sputum wet weight (Lewis, Williams & Olds 2012). Included in this systematic review and meta-analysis was a study evaluating the effectiveness of conventional chest physiotherapy versus combining FET (consisting of huffing) with conventional chest physiotherapy (consisting of PD, percussions and expansion exercises). The result 30 minutes post treatment was in favour of chest physiotherapy combined with FET group with an increased sputum wet weight. This study only included participants diagnosed with CF and aged 14-28 years old (Pryor, Webber, Hodson & Batten 1979).

In contrast to these immediate effects, a study by van Hengstum, Festen, Beurskens, Hankel, Beekman & Corstens (1988) evaluated the 24-hour effect between conventional chest physiotherapy (PD, percussions and coughing) and FET (PD, diaphragmatic breathing, expansion exercises and huffing). There was no significant difference between either groups when measuring sputum clearance. This study was also conducted on patients with CF between 15-27 years old (van Hengstum et al. 1988). More recent research aimed towards paediatric patients with a LRTI not associated with CF is needed.

PEP is created when an individual blows out against a resistance. This resistance can be in different forms usually in the form of a PEP masks or valve (Olsén, Lannefors & Westerdahl 2015). The principle behind PEP is to create a more consistent expiratory airflow (Rogers & Doull 2005). The pressure build-up will recruit collateral ventilation in children older than three years of age allowing air to reach areas behind the secretions (Rogers & Doull 2005; Rosenberg & Lyons 1979). For babies that are unable to participate in active techniques PEP can be facilitated via a mask over the nose and mouth (Button & Button 2013).

In older children PEP can be created via blowing into a bottle, bubbles or a whistle. This form of therapy is not an objective measurement but can facilitate enjoyment towards physiotherapy (Morrow 2019). Children must be able to sufficiently blow and not only suck when evaluating the choice of using a bottle for PEP therapy (Rogers & Doull 2005). For children with a LRTI under the age of three the effectiveness of PEP is still unknown. Breathing exercises can be performed in any position and it is cost-effective as parents can assist children, not only a therapist. These techniques can be done in conjunction with other manual techniques to increase lung expansion and secretion mobilisation (de Boeck & Zinman 1984).

2.7.4 Mobilisation

Mobilisation can be used as an adjunct to manual treatment to facilitate airway clearance (Morrow 2019). Mobilisation includes movement performed actively by the patient or passively by the therapist. Exercise prescription should be guided according to the patient's developmental level and capabilities (Morrow 2015; Button & Button 2013). There is no evidence in favour of exercise to facilitate sputum clearance in children with acute LRTI (Morrow 2019), however it can contribute to the level of

enjoyment as well as positive relationship between the patient and therapist. Play therapy such as bouncing the patient on the therapist's lap on a gym ball can also facilitate passive autogenic drainage (Lee, Button & Tannenbaum 2017).

2.7.5 Suctioning

Suctioning is frequently performed after chest physiotherapy to remove loosened secretions (Morrow & Argent 2008), especially in children with a poor cough reflex and inability to effectively blow their nose. Suctioning can be performed via two routes either through the nasopharyngeal or the oropharyngeal route (Morrow & Argent 2008). A few studies evaluated various clinical effects of endotracheal suctioning in mechanically ventilated children but not the effectiveness of open suctioning in a non-ventilated patient (Schults, Cooke, Long, Schibler, Ware, Charles, Irwin & Mitchell 2021; Morrow & Argent 2008). Mechanically ventilated children are not the focus of this study. The indications for suctioning should be clearly evaluated before routine use and should be performed in the presence of retained secretions (Morrow & Argent 2008).

A few different nasal aspirators are available for parents to use such as the NoseFrida, BabyVAC, Braun electric aspirator and a bulb syringe. A current clinical trial by Menoch (2020) is evaluating nasal suction by NoseFrida versus bulb syringe in infants under 18 months. No other reference in literature is made about available nasal aspirators for home use by parents. Parents, caregivers, and therapists should be aware of the possible complications of suctioning as listed by Morrow and Argent (2008) in their comprehensive review.

A recent study evaluated the effects of four-hourly superficial nasal suctioning by parents or caregivers, on the child's feeding ability. This study was performed in India and 75 participants with bronchiolitis under the age of two years were included. The study found a significant positive effect on the ease of feeding between the fourth and 16th hour of suctioning, before feeding. Due to the applicability to this study this treatment technique should be considered as part of the home education to parents (Joshi, Parihar & Singh 2019).

2.7.5.1 Other effects of suctioning

In a recent integrated review, the author evaluated the effects of endotracheal suctioning on the wellness of the patient using the Neuman systems model (Fisk 2018). This incorporates psychological, physiological, developmental, sociocultural, and spiritual aspects (Neuman 2001). The author states that endotracheal suctioning has the potential to lead a child away from a state of wellness (Fisk 2018). One of the measured outcomes was the effect of suctioning on pain experience. A RCT and cross-over study evaluated the effect of positioning and handling during suctioning on physiological effects in preterm babies. Thus, indirectly observing the effect on pain perception. The tucking position during suctioning decreased heart rate when compared to normal suction routine (Peyrovi, Alinejad-Naeini, Mohagheghi & Mehran 2014).

The decrease in heart rate can be associated with a decrease in pain and agitation during the procedure (Fisk 2018). This study was performed on premature infants only and physiological parameters were used as an indication of pain, and not as the effect on the patient resulting from the stressor (Peyrovi et al. 2014). A gap in the literature exists on the effects of nasopharyngeal suctioning on older children. The older child population are usually the ones that can recall these unpleasant events (Fisk 2018). The result of this study by Peyrovi et al (2014) is a non-pharmacological intervention to decrease psychological effects of suctioning. Although the study participants are preterm, it should still be considered when treating and suctioning children under three years of age.

2.8 SUMMARY OF PHYSIOTHERAPY TECHNIQUES

It is thus recommended that after evaluation a treatment plan should be individualised and not routinely prescribed. It should aim at incorporating different aspects of the patient other than the immediate pathology, such as developmental stimulation techniques combined with ACT (Morrow 2019). The article by Morrow (2019) summarises available literature on airway clearance techniques, including the effects thereof. High-level evidence for chest physiotherapy techniques in LRTIs in the paediatric population, is still limited (de Boeck et al. 2008). Some techniques are known to facilitate a positive relationship between patient and therapist. Other techniques might cause the opposite effect (Morrow 2019).

2.9 PSYCHOLOGICAL EFFECT AND FAMILY INVOLVEMENT

A lack of literature exists regarding the psychological effect of chest physiotherapy on children with LRTIs, or the perspective of the parents towards it. The experience of a parent during a general hospitalisation episode is well-known (Loyland, Angelhoff, Kristjánsdóttir & Sjolie 2019). The experience of a parent regarding general practitioner (GP) visits and antibiotic prescription for a child with a LRTI, has also been researched (Halls, Van't Hoff, Little, Verheij & Leydon 2017). However, no reference is made to chest physiotherapy specifically. The routine referral of children with LRTIs for chest physiotherapy has the potential to be costly and it can be a traumatic experience (de Boeck et al. 2008; Krause & Hoehn 2000).

A sick child, especially a child that is hospitalised, puts additional stress on any family (Melnyk 2000). This stress factor can be addressed by applying the family-centred care approach. In 1956 the British Government commissioned a report for the welfare of children in hospitals (Platt 1959). Since then, there has been a drive away from standard hospital care rules, such as restricted visiting hours and independent decision making by the medical team (Coyne 2008). The new focus is to include families in the treatment regime starting from the planning phase to the re-evaluation of the outcome (Neff, Eichner, Hardy & Klein 2003; Department of Health 2023). This involvement might best attend to the child's developmental and emotional needs (Neff et al. 2003).

Family-centred care is a theoretical framework involving parents in the care and planning process of their child's treatment. The article by Shields et al (2007) found that parent-involvement can reflect in an increased participation of the child in their treatment. In a paediatric population, especially if the child is preverbal, the information obtained from parents is crucial to decision making (Shields et al. 2007; Neff et al. 2003). Benefits of this family-centred care include improved communication, patient gratification, combined decision about discharge protocol, transference of education and improved safety of the patient (Mittal 2014).

In contrast, applying this theoretical framework might add to the stressful experience of some parents. Parents are placed in a position to make decisions that they feel they are not well equipped for. This open form of communication can potentially disclose information the parent or child was not ready to hear. This unwanted news can negatively influence the parent and patient relationship (Copley 1997).

A qualitative explorative study by Melo, Ferreira, Lima & Mello (2014) was conducted in Portugal. The study investigated different perspectives from parents and healthcare workers regarding parent's involvement in their child's care during a hospitalisation episode. The needs of the parent, considering their rights and their responsibilities were also incorporated. The results proved that communication and joint comprehension is crucial for the child, the parent and the healthcare team (Melo et al. 2014). Effective communication can decrease stress-levels, improve a willingness to participate in activities thus lead to improved autonomy. Attitudes and actions from the healthcare team can influence the parents' engagement either positively or negatively (Power & Franck 2008). Education and facilitation from healthcare professionals can create a feeling of capability when a parent needs to decide or perform an important action (Lopes & Dixe 2012).

Despite the drive towards family-centred care, it might be delayed by healthcare professionals due to fear. When healthcare professionals doubt the abilities of the parent, or they lack the communication skills to transfer the information to the parent, this mutual decision making effort might fail (Melo et al. 2014). The ability of the healthcare professional to listen to the parent, show empathy towards the situation and appropriately give the relevant information to the parent, is cardinal to the humanisation principle of the healthcare professional (Sikorova & Kucova 2012). The parent can create a safe environment for the child but on the other hand can also induce the opposite negative effect. There is a direct relationship between the anxiety levels of the parent to those of the child. This relationship can be used to predict the anxiety levels of the child (Cameron et al. 1996).

A recent cross-sectional survey evaluated the impact of the restricted hospital visiting hours in a neonatal intensive care unit (NICU) in the United States, during the Covid-19 pandemic. The authors found a major decline in the family-centred care approach as result of limited access to the NICU. Therapeutic services were also limited during this period (Darcy Mahoney, White, Velasquez, Barrett, Clark & Ahmad 2020). These visitation restrictions disregarded the beneficial effects of the family-centred care principle as mentioned earlier. This study was performed on the relationship between new-borns and parents and no outcome towards physiotherapy treatment specifically. The results should still be considered given the timeframe of this study during the

Covid-19 pandemic and the effect of the presence of the parent on the child. Contradicting research regarding the wishes and the effect of the parent regarding this co-inclusion warrants further investigation.

Parents of children with CF are frequently involved in the continuation of chest physiotherapy treatment themselves. This involvement creates feelings of pressure and doubt, but also give the parents the opportunity to facilitate a positive impact in their child's life (Andrews, Smith & Cox 2020). No other literature, pertaining specifically to the perception of parents towards chest physiotherapy in children with LRTIs, in hospital or as an out-patient, was found. Educating parents on the various aspects of a LRTI is an effective method for preventing further infections and managing their expectations regarding respiratory management (Taylor, Kwan-Gett & McMahon 2003). Considering the different results as mentioned above, each patient and parent should be treated individually and in co-ordnance with the rest of the healthcare team.

2.10 CONCLUSION

Research on the aetiology, pathophysiology, and medical treatment of LRTI is extensively studied. Contrary to this, the parents' perspective on this condition, and the respiratory management, is lacking. Research on indications for different types of chest physiotherapy techniques are available. However, the attitudes and concerns of parents regarding chest physiotherapy for their child, is still unknown. Engaging the parents in the treatment cycle is critical. The child, as well as the parent, might have a negative reaction to chest physiotherapy if no attention is paid to the parent's attitudes and concerns.

Chapter 3 METHODS

In this chapter the methodology of the study procedure is described. Including study design, recruitment of participants, execution process, analysis and safe keeping of information.

3.1 STUDY DESIGN

This study applied a qualitative exploratory design, using semi-structured individual interviews. The exploratory design was incorporated due to lack of previous data or research on this topic.

3.2 STUDY SETTING

Participants were sourced from two different facilities – Mediclinic Midstream, a private hospital, in-patient paediatric unit, and an out-patient private practice setting. Both sites are in Gauteng and these units treat paediatric patients between birth and 12 years of age.

3.3 PARTICIPANTS

3.3.1 Source of participants

After referral for chest physiotherapy by a medical practitioner, parents of children aged under three years, with a confirmed diagnosis of LRTI, were invited to participate in the study. The majority of patients were English or Afrikaans speaking.

3.3.2 Sample selection

A purposive sample was used in both in-and-out-patient groups. Purposive sampling was used as parents who met the inclusion criteria were invited to participate in the study. Semi-structured individual interviews were performed until data saturation of information was reached. Participants were sourced between December 2021 and February 2022. Twelve participants were interviewed. Data saturation was reached when no new information was obtained during the interviews.

3.3.2.1 Inclusion criteria

- Parents of children under the age of three years who have been diagnosed with a LRTI.
- Both in-and-out-patients.

- The patient must have had at least one chest physiotherapy session, witnessed by the parent.
- Parents over the age of 18.

3.3.2.2 Exclusion criteria

- Any parents of current NICU/PICU patients.
- The researcher must not have been the sole treating physiotherapist.

3.4 PROCEDURE

3.4.1 Pilot study

A pilot study was performed to identify any sources of technical or logistical problems, also setting the tone of the interview to ensure no leading or manipulation happened during questioning. Two interviews were conducted as part of the pilot study. The principal researcher (DF) and supervisor (JP) reviewed the recordings to identify any concerns. There were no changes made to the main study after the pilot study, thus the data from the pilot study are represented in the main study.

3.4.2 Main study

Potential participants were identified by the researcher after the medical practitioner had referred the patient for chest physiotherapy- this pertained to both in-and-out-patient settings. The parent of the child was then invited to participate in the study. Firstly, a thorough written explanation was given to the potential participants (Appendix 1). This was in English or Afrikaans according to the parent's preference. If a parent of a different language group wished to participate in the study, a translator/interpreter was available to facilitate the session, as per usual practice at these facilities.

Information about the process of this study, clarification of the responsibilities of the parent and the interviewer, and a clause to state that parents may request to withdraw at any time, was stated. The parent had at least one day to decide and discuss if they wanted to participate in the study or not. If the parent agreed, written consent for both the participation as well as the interview audio-recording was obtained (Appendix 2). No further explanation with regards to chest physiotherapy was given.

A suitable time for the interview was arranged. The interview was conducted in a private room either in the out-patient department or in the child's hospital room. The parent was asked to complete a demographic questionnaire for adding additional context to the study (Appendix 3). Questions included the background information of the participant as well as the birth history of the child. If the participant was unable to read the questionnaire, it was done verbally and completed by the researcher. As per standard practice, a translator was available if a language barrier was present.

The audio-recording was started, and the semi-structured interview was conducted by the principal researcher (DF). Parents were given the choice of being interviewed in either English or Afrikaans. All interviews were conducted in person and lasted between 10 and 30 minutes. Short notes were made during the interview to capture explicit emotions or additional context. These notes were made on the back of the completed demographic questionnaire to lessen the paper-trail. The interviews started with four guiding questions with the opportunity to elaborate on certain questions or probe for further explanation/elaboration (Appendix 4)(Adhabi & Anozie 2017). Interview questions were developed to answer the objectives of the study and via discussion between the principal researcher (DF) and the supervisor (JP). No explanations were given during the interview, as this might have influenced the perspective of parents.

After the interview had been completed, and the parent had a chance to raise any last concerns, the recording was stopped. It was clear from the start of the interview that the child would have received treatment, regardless of whether parents participated in the study or not. Refreshments were available throughout the interview. If the child was present, a variety of sterilised games and crafts were available to keep them quietly occupied. All Covid-19 precautions and safety measures were implemented; namely, a well-ventilated room, both participant and researcher wore masks, social distancing was maintained, and sanitiser was freely available.

3.5 ETHICAL CONSIDERATIONS

The Human Research Ethics Committee (Wits) granted ethical clearance (M210722) (Appendix 5) on 22/11/2021. The execution of the study adhered to principles of autonomy, beneficence and justice in keeping with the principles of the Declaration of Helsinki (World Medical Association 2103). This study posed a low risk of emotional

distress to parents during the interview. A distress protocol was available if such a situation arose (Appendix 6). Formal permission was obtained from the two sites where research was conducted, namely: Wilna Foot Physiotherapists and Mediclinic Midstream (Appendix 7). Formal written consent was obtained for both participation in the study, as well as the interview audio-recording. Information about the study was given and the parents had sufficient time to decide if they wanted to participate. It was stated at the beginning and end of the interview that participants may withdraw or choose not to answer a question at any given time without a formal reason.

The child of the participant received chest physiotherapy regardless of the above mentioned. No incentives were offered - only reimbursement for travel and time based on Automobile Association of South Africa rates. The identity of the participant and the child remained anonymous by assigning codes to each participant and child. The electronic data were stored on a personal use (DF), password protected computer. Demographic information and field notes have been shredded. Contributing to both dependability and confirmability, the coding system was done by the principal researcher (DF) and the supervisor (JP) to ensure consistent codes.

3.6 DATA ANALYSIS

3.6.1 Data management

The interview was recorded on iPhone Audio-Note application. The audio-recording was transcribed verbatim by the principal researcher (DF). The audio-recordings were discarded from the iPhone Audio-Note application and saved onto a password protected computer once transcribed. Participants remained anonymous via assigned codes following the same order in which the interviews were done. A Word document was created separately for each interview with the code-name for example P1, P2. When a patient (child's) name was mentioned during the interview, it was anonymised in line with the participant code name for example C1, C2.

Transcribed interviews were stored on a private use computer (DF) with a password protected function. The demographics page, with additional short notes on the back, was scanned into the computer and saved under the same code-name system. The page was then destroyed via paper shredder. Therefore, all sensitive information is saved on one personal electronic device only. Information will be deleted after six years

if not published or used for further studies in an anonymised format, for academic purposes by other researchers, subject to their own ethical clearance obtained.

3.6.2 Data analysis and interpretation

An explorative study approach was used when data were interpreted (Sutton & Austin 2015). This ensured that the objective of exploring the parent's knowledge, experience, attitudes, and perspectives was reached. Demographic data were analysed using Excel. A manual coding structure was created as interviews were evaluated. Using the deductive approach, primary codes were assigned, then a second order category was developed from these codes (Punch 2014). The categories formed the final themes through thematic analysis, and these became the discussion points. Individual raw quotes were extracted from interviews to highlight themes identified. The coding system was done independently by the principal researcher (DF) and supervisor (JP) to ensure consistent codes, no discrepancies were found.

3.6.2.1 Ontological and epistemological assumptions.

Identifying the possible ontological assumptions of this study the principal researcher acknowledges that she is a young working woman without children of her own. She does not fully comprehend the stress associated with looking after a sick child. She might not fully relate to what the parents are saying. The principal researcher is a physiotherapist and is aware of all the current evidence for the need and the benefits regarding the respiratory management of sick child. This includes the medical and physiotherapy management. The researcher is aware of the pathology of a child with a LRTI. These assumptions may have influenced how data was interpreted.

3.6.3 Rigor of research

To establish trustworthiness, the Lincoln and Guba principles were applied. To ensure credibility, a copy of the final themes and codes were shown to participants via electronic format utilising the "member checking" principle. Ensuring that the essence of what was said and meant were captured. No major discrepancies were raised - therefore no changes were made. The field notes obtained during the interview also contributed to the credibility. Transferability was assured by a thick description of setting and type of participants included. Both in-and-out-patient settings were included to widen the transferability. Dependability was displayed through the consistency of the semi-structured interview questions across interviews. The transcripts were

evaluated and later re-evaluated to ensure dependability. Contributing to both dependability and confirmability, the coding system was done by the principal researcher (DF) and the supervisor (JP) to ensure consistent codes. For authenticity, depending on the data collected, raw quotes were extracted and used within the given theme (Colorafi & Evans 2016; Lincoln & Guba 1985). The results obtained in this study will be presented in the following chapter under the described structure as discussed.

Chapter 4 RESULTS

In this chapter the results from the interviews will be discussed. Focussing firstly on, the demographic information of the participants and their children. Secondly, the most important themes extracted from the conducted interviews will be explored in more detail. The principal researcher is a paediatric physiotherapist without children. She has never managed a sick child of her own before but have treated multiple children with LRTIs. She has spoken to a lot of parents of children with a LRTI and has the assumption that it might be a stressful situation. As a young working woman, she can envision herself into the lives of these parents. These characteristics should be considered when interpreting the results.

4.1 DEMOGRAPHIC INFORMATION

After conducting 8 interviews, data saturation was reached. An additional 4 interviews were conducted to ensure credibility. The 12 participants all witnessed at least one chest physiotherapy session. Treatment techniques differed and were patient specific. Techniques mostly included a combination of percussions, vibrations, nebulisation and nasopharyngeal suctioning.

The demographic information of the participants and their children is presented in the tables below.

Table 4-1 Demographic information of participants

Demographic data	**N=12**
Mean Age	34.3 (SD±4.9) years
Median Age	33.5 (IQR:30.5-39)
Female/Mother	12
Tertiary Education	11
Attended out-patient setting	6
Attended In hospital setting	6

All participants were the mother of the child. All participants were married. Participants were sourced equally from the in-patient and out-patient setting.

Table 4-2 The diagnosis of each child documented as reported by the mother

Diagnosis	N=12
Bronchiolitis	8
Pneumonia	2
Bronchopneumonia	2
-RSV detected	7

In hospital a viral PCR identified the pathogen, in the out-patient population the diagnosis was mostly as per medical practitioner's diagnosis and not specific to tested pathogen. RSV was diagnosed in n=7 of the patients, only n=1 diagnosed with Influenza A, and four had no specific pathogen documented.

Table 4-3 Background information pertaining to the child

Additional child Information	N=12
Mean Age	18.8 (SD± 6.5) months
Median Age	16.5 (IQR:8.5-22.5) months
Siblings	6
Crèche	9
Previous hospital admission	8
Previous physio	6
Premature birth <37weeks	1

Eight children had been admitted to hospital before (different reasons for admission, either for a chest infection or for other medical conditions such as jaundice or otitis media). Six had chest physiotherapy prior to this episode of sickness.

4.2 THEMATIC ANALYSIS

The frequent codes that emerged formed sub-themes and these led to an encompassing theme. This encompassing theme was "it is tough taking care of a sick child". Three important sub-themes were identified namely: personal challenges; treatment options and parent understanding. Under each sub-theme the following codes were identified.

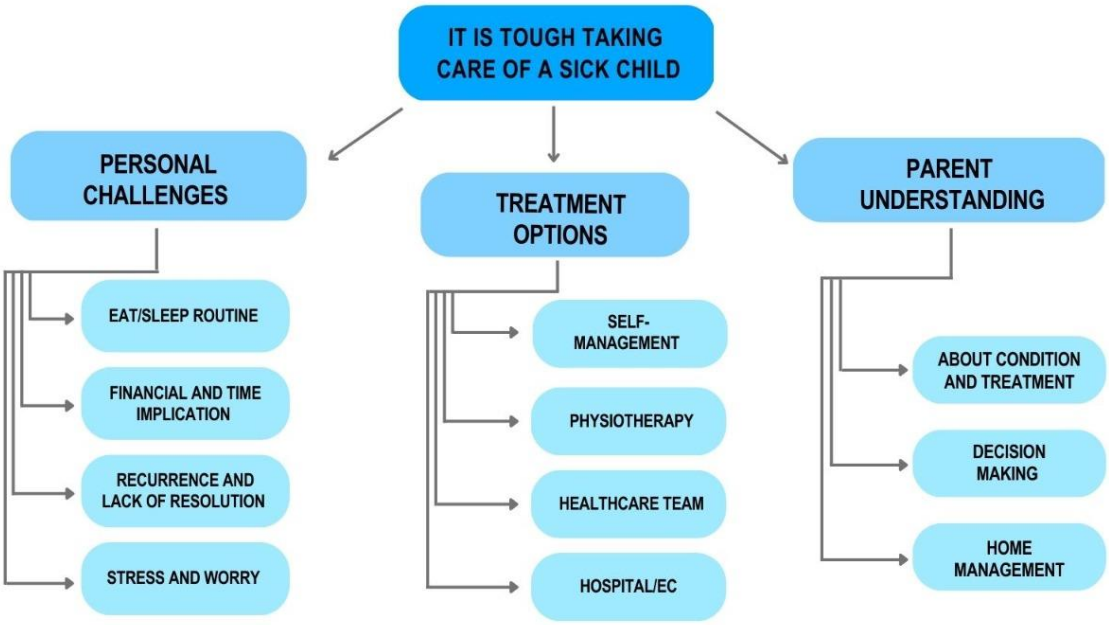


Figure 1-1 Thematic Analysis

Personal challenges that parents of children experienced while taking care of their sick child included, but were not limited to, eating and sleeping patterns, financial and time implication, questions regarding the recurrence of this illness and stress and worrying thoughts. Different treatment options included the self-management of the parent, physiotherapy, involvement of the healthcare team and hospital/emergency centre (EC) visits. Parent understanding included codes about information regarding the condition/treatment, decision making and home management/prevention.

4.2.1 Personal challenges

4.2.1.1 Eat/sleep routine

The challenge of getting a sick child to eat properly, or to maintain a good sleeping pattern for the child and the rest of the household, emerged in 11 of the interviews. Participants spoke about the difficulty of getting the child to eat before they can administer medication. They also mentioned that in hospital, the sleeping routine was disturbed more than it would be if the child was at home.

> **P2** :…it's been a bit of a challenge with regards to his sleeping, his eating and drinking. With all the slime and the breathing problems, he has not really wanted to eat or drink…

P2: …the hospital stay has also become a challenge with regards to routine and stuff that we've had at home.

P4: …And then also with the eating you can't give medicine if he has an empty stomach. So yeah, that's challenging sometimes.

P5: No, it's most definitely not an easy job. Because their sleep is not on the priority list…it's not nice for him to sleep, not being able to breathe comfortably. Um, so yeah, he's not sleeping well, which obviously keeps me awake as well.

4.2.1.2 Financial and time implication

More than half of the participants commented on the financial and time implication of taking care of a sick child. Mothers who mentioned a time implication expressed how caring for a sick child while working influenced their workload, potentially influencing their capabilities of doing both. Performing all the required duties prescribed by the medical practitioner also require more time.

P5: …working and looking after him is, is a 24-7 thing, um, literally not leaving them alone.

P10: She wants to be next to you. You can't go anywhere…when you want to leave her on the floor to go to the loo, she was, literally crying.

P7: It's quite. It's a lot of work to do because you have to nebulise, you have to give them antibiotics, then you have to do the physio. So, it's quite a lot.

Mothers who raised the financial implication spoke about the medical aid savings being depleted early in the year, and that the out-of-hospital medical practitioner visits, physiotherapy and medication costs all adds up, causing financial strain on the caregivers/family.

P4: Very expensive. Our medical aid was depleted in June, July? So since then, we have to pay everything cash when we go to the doctor or yeah and medicine and then physio as well, so it's quite rough.

4.2.1.3 Recurrence and lack of resolution

Two thirds of participants raised concerns about when the infection will pass, or why does it keep happening again and again. Most mothers expressed these comments as a rhetorical statement. Mothers of children that have siblings or are in a crèche were aware of the possible infection transmission in these environments.

> **P2:** Again (mom sounds frustrated), the second time around (referring to recurring sickness) …. we do have the two girls at home as well that are in crèche. So, it could have just been that, that they brought something else home…that he just got something and picked it up again and we just started from, from scratch.

> **P7**:..especially last year after he just, before he turned one, that whole year, he was like sick almost every month…sometimes I think with being in the crèche, it's like recurring, he just gets better. Then he goes back. Then he gets sick again, you know?

> **P12**: I just hope it stays like that. It feels like it is a constant thing... getting some kind of bacteria or virus and getting sick…I'm doing everything the doctor prescribed...to make sure it doesn't happen again…she is in a crèche, and she has a brother... So unfortunately, life happens…

4.2.1.4 Stress and worry

Mothers expressed experiencing additional stressful emotions they experienced while taking care of their child with a LRTI. Most mothers were concerned about the breathing ability, and the fact that the child was still small. Mothers commented on their feelings as well as the reasoning behind their concerned state.

> **P3:** So normally, it's always a sense of, oh, no, not again…

> **P9:** …it's been fairly worrying given that she is so small and was born prematurely …so it is a little bit of a worry, especially because it's now the start of RSV season…

> **P8:** I was panicking.

P10: …It's very difficult and disturbing because you are scared that, is she breathing okay. Is she even managing to breathe?...with kids somehow I feel, you can't just take it light.

P11: As a mommy, you stressed out about this child…Um, that worried me because also when I picked her up and I realised it was more serious than I thought (referring to child's condition).

4.2.2 Treatment options

4.2.2.1 Self-management

Mothers that commented on their self-management of this condition expressed feelings of doubt and uncertainty about their own management.

P1: I don't have all the knowledge as a mom to look after him the way the professional does.

P6: Look, um, I mean, I'm, I'm not an expert, so I wouldn't know.

P8: I was panicking, I ended up just touching and going, trying this spray, trying this medication, you know?

Most mothers had a repertoire of treatments they do before seeking professional help. Mothers that have been through this "sick child" experience before, commented on how those experiences helped to equip them to deal with this condition and its replications.

P7: I feel like at this point now we feel equipped because like… we would normally try to first give him, Mucospect for the cough. Then if we have nebules at home, we'll start nebulising him. And those types of things. Then if it becomes severe where he's got fever and he's really struggling, then we'll take him to the doctor.

P9: Given that I'm a third time mother and I've had a baby with RSV. I think I've handled it quite well… I was a little bit more worried this time, given that she is so small.

P12: She is the second born, um, I've known prior to now how to handle the situation. When she coughs, I always try to listen if it's a wet or a dry cough… having a fever with it... What colour is the mucus... I'll know whether to take her to the GP or whether to take her to the paediatrician…we can't treat her as effectively at home…I know what to expect. I know what is next... nothing shocks me anymore... I have seen it all…

Mothers utilise different sources of information to equip themselves.

P8:…It's actually very difficult it's, you don't know what to do because he's a baby… the nice thing is my mom is there. And because she's older and seen a lot of years, so she just keeps assuring me that no, he's going to be fine.

P9: I've spoken to the doctor a lot, I have also read up a lot about the treatment…

P10: Okay. So, when I read about it, it affects both the chest and the lungs…So, so I saw that actually, it's a way of releasing the phlegm (referring to her research on chest physiotherapy).

4.2.2.2 Physiotherapy

Mothers had different opinions about being present during the treatment session or not. Seven of the 12 (58.3%) parents reported the child is much calmer if they are present during the treatment session, n=1 reported she can't decide which is best and n=4 prefer not to be present as it upsets both the mother and the child.

P1: Well, while sitting there, he wanted to be with me, sit on my lap, which makes it a bit hard because then the physio can't do what she needs to do. But once we get him to calm down on the table, he was fine with me just sitting there…that he realised that she's not there to hurt him and I'm not going anywhere. So, I think he felt more ease that I was there and he wasn't being hurt at all.

P5: It's calming for me to be with him… if you're not an emotionally strong enough person, I wouldn't suggest that you be with him, or look at the process of the physio. Um, but I'm emotionally strong enough to handle this, to keep him calm while they are busy.

P12: I think she manipulates me… her primary caregiver, um, I think her crying is also to try manipulate me to tell me they must stop. When I'm not around she actually, she does tend to be a lot calmer…

When mothers were asked about their experience of physiotherapy, most of the parents (n=11) (91.7%) reported the effect, and the experience was good, only one mother reported it was traumatising and she never wants this experience again. Most mothers were initially concerned then reassured.

P1: It was at first, um, (mom looks anxious) I was a bit scared and uncertain about what you are doing. Is it hurting him? Is it not? Um, but then I realised after watching that it's not bad for him at all, he actually enjoyed (it) during.

P2: General experience very, very happy… I think the physio made the biggest part of the difference for the hospital stay….it didn't bother me that I was not present… Positive and it's helped him to be able to breathe (referring to physio).

P4: The experience for me is good (referring to physiotherapy treatment). And I like to bring him here because I know it makes him better (referring to out-patient physiotherapy). My husband doesn't like it. So, he stays home. I think it's traumatic for him to see the baby crying. But for me, I would definitely recommend it. Because yeah, you get all that "gaga goedjies uit" … I think he doesn't like it (referring to child).

P6: So, I think we are both equally traumatised… she was screaming the whole time… I can't go through it again. It's just, it's terrible seeing my child like that… So, whilst I understand she needs to have the physio, it helps her. I mean, I, I can't think that a child screaming like that, that it ultimately helps her.

P8: Of course, the process of the physio is very, it's very painful to the mom, but it has to be done. So, it's not something I can say I'm concerned about. It's just as a mom, I don't want to see it…I just liked the results, but the process is it's a bit painful to witness…

P9: And of course, the benefits of it and the advantage of it and how much quicker you can actually, um, you know, make the child better than to just leave it.

Most mothers commented on the suctioning being the worst, but most important part of the treatment. Mothers spontaneously commented on what they thought their child's experience was during treatment.

> **P1:** The only time he did not enjoy (referring to chest physiotherapy) was the suction of the nose, which I understand is a bit uncomfortable for him, at first, I was concerned, but after watching the treatment, I was more at ease.
>
> **P2:** No, I think he wasn't traumatised by it at all. I mean, a few sessions, you know, he fell asleep…
>
> **P4:** The steam is fine. I think that's not a problem. But yeah when it comes to sucking out the stuff. Yeah, he doesn't like it. I think it's just discomfort. I don't think it's painful. Because after that, he's fine. He plays and he's happy.
>
> **P10:** She was not in pain. I could see that she was relaxed. She was just maybe just wondering what is happening.
>
> **P11:** I think that is the most important (referring to the suctioning). So, I think the suctioning is quite a traumatic experience. I think even for me, I'm I was a bit traumatised. But it's quick. And I think she realises afterwards, she feels better.
>
> **P12:** It is very professional. I must say it helps. I personally cannot do it at home, I have tried…The suctioning part, um, I feel that is actually the most important part because that's, that's what gets out all the mucus in the end… the first time was very traumatic, since then, it has not been…She gets her stamp (referring to the reward after chest physio). She is fine… She accepts it and it is over and done with.

Mothers expressed the need for the professional to be trained in paediatrics, but in general they reported being satisfied with the feedback received after treatment.

> **P2:** I was happy with that because I could hear the difference when he came back and the feedback that I got, you know, when everyone came back or brought him back (referring to the different physiotherapists bringing back the child from the treatment room).

P5: My experience up to now was that there was only one specific person that actually knew what she was doing. You are either meant to work with children or you are not. So, if you don't know how to work with babies you are at the wrong place.

P12: I know what they are doing. I know why they are doing it. They have explained that to me.

4.2.2.3 Healthcare team

The general comments from mothers about practitioner visits revolved around specialisation of care. Most mothers rather prefer to take their child to the paediatrician instead of the GP as they perceive the paediatrician to be more of a clinical expert.

P7: We don't take him to the GP still. We still take him directly to the paediatrician.

P11: So, I'm a bit concerned about GP knowledge in terms of paediatric medication. So, he was a bit uncertain of himself… So yeah, I'm concerned about the general management of paediatrics…

P12: GP's don't specialise in kids that much... they don't know how to treat it… So that's a very big problem... try to get to the paediatrician as soon as possible.

Mothers raised the need for better communication and feedback about results and treatment plans from the healthcare team. Mothers reported the need for medical practitioners to spend more time and to listen to their concerns.

P1: When the nurses come in to put in the drip, they need to explain to me what medication are they actually administering to him.

P2: If he was sleeping, then the doctor would just come in and ask me how it went (referring to the paediatrician consultation regarding the night in-hospital). And then he would leave again, he wouldn't check again.

P5: I think in today's world well I've seen it a few times, the doctors, um, doesn't come back to you with results, they just kind of (say) it was a negative so they don't mind telling you that it was a negative or whatever the case may be.

P6: They don't explain to you why this is happening, your child is crying her head off. And I mean, you sort of in the middle of it. So, I do think if they actually just spend two minutes, just stop, just explain what's happening. I don't think it's second nature for them to just take a minute and explain to a parent, this is what's happening with your kid. This is why we're doing it…

P9: Obviously you only see the doctor for a very limited time and there's other things that you want to know… some people are more talkative than others, so some would offer, you know, … more information.

P11: It's just more knowledge from the doctor. Whereas instead of me asking, I think that there should be better information giving by the doctors and case history taking.

Many of the mothers expressed appreciation for the healthcare workers who did take the time to communicate properly with them.

P7: He (paediatrician) takes time to listen. He checks everything… the nurse was able to tell me exactly, no, we're going to do this.

P9: Um, they (nurses) were passionate about her getting better and they worry almost as much as I do. You know, everyone who comes back on the shift just wants to come and see whether she's better.

P10: They would like, update me and tell me exactly what the problem is and why and how yeah. So, so it helps to at least be in the know and it helps to, to understand how to deal with the problem.

Mothers recognised the importance of having the right team of healthcare workers caring for their child in which they trusted.

P3: I'm very lucky, I've got a very good team…And I've always gotten good advice and support from them. I'm very confident in the team I have gathered around myself and my child.

P5: The team of professionals that is on board right now really do know what they are doing.

P7: Oh, with the healthcare team, I trust them, I feel like they are good. Um, like I, I trust their opinion and things like that.

4.2.2.4 Hospital/Emergency Centre

Most mothers reported that they felt safe when their child was in hospital, and under the care of professionals.

P1: So, once I hand over to a professional, it does bring me a bit of ease, but at the same time, it does make me sad (mom referring to hospital admission).

P5: …more comforting having people around you and when they are around you, you can tell, they know what they're doing or not.

P9: Yes, definitely gave you some peace of mind (being admitted to hospital) ….just to know that she is in good hands, and they are looking after her, so definitely peace of mind compared to being at home…

P10: It was great because they were professionals who knew how to attend to the problems, they were competent and dealt with such before (referring to hospital staff). So, they knew exactly what to do and how to treat….you could shout when you felt uncomfortable with something.

Only one mother stated that she would rather her child not be admitted.

P6: I don't ever want to repeat this again (referring to admission)

The mothers that went to the EC for assistance reported that they did not receive the level of care they would have liked from the emergency room staff.

P3: And the other thing that was (participant thinking, hesitant) that I felt could have been dealt with better was when he was in the emergency room the two times. They never consulted the paediatrician at all.

P7: So, when we took him there to the emergency…Then the doctor that was there, he just said, you need to give the antibiotics 48 hours to work…so basically no help at the emergency (centre).

4.2.3 Parent understanding

4.2.3.1 About condition and treatment

Mothers were able to verbalise what they understood was wrong with their child.

> **P2:** But we suspected that it might be like a milk allergy or something as well, that possibly causes the slime. He is on different milk. Uhm, Because of that suspicion, but we haven't tested that yet. But I think this is just a virus that he picked up somewhere and it's just gotten worse.
>
> **P5:** Well, right now we do know that he is sick with a virus that affects his lungs. Um, well he's got a few viruses that it is affecting his lungs, his ears and so forth. So, with the phlegm that is also building up, makes it difficult…for him to breathe. So, the nebulising, the physio obviously helps to loosen the phlegm and for him to get it out, um, so that he can breathe… easier.
>
> **P6**: From what I've seen on the x-ray and what the doctor has explained to me, it seems as if there is… slime blockages in the…lung and it…makes it, it belabours the breathing (mom struggling to express herself)… which helps her to express the phlegm and then opens up, that lung again (referring to physio treatment).
>
> **P9:** I did notice some of the signs and then took her to the doctor…So I think, um, it's an infection of, some of the airways… as well as in the lungs… she was very short of breath and, um, also struggling, you could see physically she was struggling to breathe… there isn't much more that can be done other than, than what they do (referring to treatment options).
>
> **P11**: She wasn't able to either cough it or to clear it, and it was moving into the lungs. If I can say it that way or the top part of the lungs and she wasn't physically able to move it out, either through a cough or whatever. I actually felt under her armpits, especially at the back, I could feel like a “goggley” or like bubbles or “raspiness” …

Most mothers still expressed the need for more information about the disease progression, the indications and effects of the treatment on the child.

P1: Is it when the seasons are changing or is it, do I have to avoid anything, um, regards to our daily lives? Maybe I should have maybe, um, not give as much milk, as milk causes slime perhaps…I do have concerns whether it's actually working or not (referring to medication). How would I know, um, if the cough persists, if it's basically just the aftermath or if it's still actually, if he's still infected?

P3: Um, I think maybe, if there's long term effects of the medication, and things that you should be aware of, such as if they prescribed cortisone, or antibiotic, if there's anything to be aware of, in terms of side effects, they never really discuss that... If there's a chance that it could weaken his lungs or lead to asthma or something like that (referring to medication)?

P3: I think the concern is always that (if) it becomes an emergency, or it progresses to a point where the treatment prescribed is not enough anymore. And you don't know what to do and it becomes an emergency situation.

P6: I want to know, I want to understand what's wrong, what we are, what we are trying to fix and how the treatment that they are prescribing is fitting into, getting her, getting her healthy.

P7: Yeah. I think it would be good to know like exactly how invasive it is, because the way it looks…it could like maybe his nose is sore afterwards (referring to physio treatment) or we won't really know cause he like can’t speak (referring to child).

P11: …this is the picture you see now. And this is the picture you should expect in two days or 24 hours.

Some were not aware of specific paediatric treatment regimens such as chest physiotherapy.

P2: I never knew how chest physio with babies work prior to this. I don't know how that whole process worked. So, it was good to see that I can see okay, there's stuff coming out.

P8: I was relieved about because I didn't even know physiotherapist do chest things and do blockages and stuff like that… I'm going to speak for most moms who we don't know that physios can fix chest infections and stuff like that.

4.2.3.2 Decision making

The participants were asked if they were involved in the decision making process revolving around the child's treatment. Mixed responses accompanied by mixed feelings about the level of involvement in this treatment process. Two out of the 12 mothers reported the mother is the one who knows the child best.

P1: They just say this is what's going to happen. Um, and to be honest, I'm okay with that because I know that is what needs to happen for him to get better.

P9: Um, but everything explained and, you know, also I was involved with even nebulising her and…everything. So, I felt very involved.

P11: A paediatric cannot indicate if they're not feeling better… it's usually the mother or the parent who notices.

P12: They ask us are you comfortable... we feel involved either me or the father. We were consulted.

4.2.3.3 Home management

Most mothers raised concerns about what they should do at home or after being discharged from the healthcare team or hospital.

P1: I think after stopping physio, when do you have to go back after the treatment?

P2: We could have gotten maybe a little bit of a better plan to take home to do…just maybe a plan as to how many sessions of physio should we attend. What other options are there? Instead of having to go to the doctor every time? (baby making sounds) Is there maybe a possible solution?

P4: I just would like to know what I can do at home, to prevent the phlegm from becoming that thick. Or how I can, what I can do to minimise that to help with

the cough…because this time, the cough, it's almost a week that he has a cough. So yeah, to really just to better manage that and get it under control.

P7:…is there anything like at home that we could do that could maybe help that we're not doing? Cause at the moment we just doing like medicine-based things we don't really do physio, like, you know, like how you would tap his back or something like that?

Mothers want information about how and when to administer medication and treatment.

P5: Um, so if it comes to nebulising or that kind of stuff, how much medicine do you use to nebulise with? When is it enough or when is it not enough? Um, you obviously don't want to run to a doctor?

P5: Um, and for me it was always a thing of how do I, or how much medicine to give him. I'm always scared of giving too much, or if I give too little, it's not going to be enough. It is not nice being here. Hanging in the air not knowing what's going to happen.

P7: We (are) giving him everything that people tell us to give him, like, you know, all the vitamins, like the boosters, everything, but it doesn't seem to keep them away from the infections. I don't know what else we can do.

P11: I think it's just how to prevent it again. I think that's the most important… how infectious is it?... sometimes it's these contradicting information… I think to know when to nebulise… he should tell me what to look out for. I kept saying, okay, what happens if she develops a cough? What can I give her?

This study was set out to obtain the attitudes, experiences, and concerns of parents of children under three years old, with LRTIs, regarding their respiratory management. The results showed that the encompassing theme among mothers was “it is tough taking care of a sick child”. The sub-themes identified during the interviews will be further discussed in the next chapter.

Chapter 5 DISCUSSION

To our knowledge, this is the first study to focus on the parent's perspective of their own management and those of other healthcare professionals in South Africa. Including their perspective of the respiratory management of their child, especially treatment other than antibiotic use such as chest physiotherapy. The main themes and sub-themes identified in this study will be discussed within the context of other literature.

5.1 BACKGROUND INFORMATION OF THE PARTICIPANTS AND THEIR CHILDREN

All the caregiver participants interviewed were all the mother of the child, the mother was the parent who stayed over in hospital or who brought the child for out-patient physiotherapy. Women usually carry the burden of caring for their sick children in addition to their normal daily routine and responsibilities. The fathers are usually the ones that will distance themselves and take on the provider role. This can lead to maternal burnout and can be avoided by involving the father in the care process (Vieira & Cunha 2020; Rafii, Oskouie & Shoghi 2014).

All children patients had a LRTI, seven patients (n=58%) were diagnosed with RSV bronchiolitis. The peak period of RSV in Gauteng, South Africa is usually between February and March (White et al. 2016). In this study we noticed that starting as early as December 2021, the children tested positive for RSV. This out of season surge can partially be attributed to the Covid-19 pandemic that decreased the RSV exposure among children, possibly due to non-pharmacological safety measures that was implemented. Measures such as social distancing, wearing of masks, improved ventilation, and frequent hand hygiene regimes could have contributed to the limited exposure. This decreased exposure led to a decreased RSV population immunity; the authors of the study referred to this concept as "RSV immunity debt" (Billard & Bont 2022; Cohen, Ashman, Taha, Varon, Angoulvant, Levy, Rybak & Ouldali 2021). Once the pandemic rules and regulations were relaxed the exposure trends increased resulting in out of season surges.

The mean age of patients in this study was 18,8 months. Three out of the six in-hospital patients were under one year of age, this statistic is in concordance with the study by

Mirkarimi et al (2020) performed in Iran. In this study 50% of children requiring hospital admission was below one year of age. Nine out of the 12 children attended crèche, which is a contributing factor for pathogen exposure. Six out of the 12 children have older siblings attending crèche increasing the exposure incidence, especially for an immature immune system (Kamper-Jrgensen, Wohlfahrt, Simonsen, Gronbaek & Benn 2006). Eight of the 12 children have been admitted to hospital prior to this episode of sickness but the reason for admission was not specified, therefore it cannot be assumed to have been for a respiratory condition.

According to a South African based study, multiple hospital admissions pose a risk to the cognitive, physical and social development in any child (Kristensen & Olsen 2006). The developmental milestones were not an objective of this study, but it should be considered when giving home advice or caregiver education. Six out of the 12 children had attended physiotherapy for respiratory management prior to this episode of sickness. However, it was not specified if the parent witnessed the physiotherapy session or not. Both these factors can influence the experience of the parent.

5.2 PERSONAL CHALLENGES:

5.2.1 Eat/sleep routine

Most participants commented on the negative effects of the irregular sleeping habits of the sick child, on the mother and the rest of the family. The adverse effects of a LRTI belabours a child's ability to breathe and cough effectively, thus sleeping and eating patterns will be impaired (Pham et al. 2020). Participants mentioned that difficulty breathing and poor eating habits adversely affects their ability to administer medication to their sick child. Mothers of hospitalised children commented on the disruption of routine when in hospital and once they return home (Kulpatcharapong, Chewcharat, Ruxrungtham, Gonlachanvit, Patcharatrakul, Chaitusaney, Muntham & Reutrakul 2020). The ability of the healthcare professional to show empathy towards this challenge will contribute to the humanisation principle (Sikoroca & Kucova 2012).

5.2.2 Financial and time implications

More than half of the participants highlighted the time implication and financial burden of taking care of a sick child. A recent study established that in low-income families the financial burden of a RSV-sickness episode equated to 32% of the total monthly income (Baral, Mambule, Vodicka, French, Everett, Pecenka & Bar-Zeev 2020). The

financial status of participants in our study were not stated, but this percentage can serve as a guide to validate parents' concern about the costs involved in managing a sick child. Although all our participants were on a medical aid the out-patient population mentioned their savings being depleted early in the year, leaving no available funds for out-patient physiotherapy services and medication. Two mothers mentioned that admission to hospital helped them to limit these out-of-pocket expenses and thus preferred this route of treatment.

Although this study did not specify if the primary caregiver was employed, managing a sick child and working, proved to be a challenge for most mothers. There is a scarcity of recent studies on this working-mother topic. A study performed in the USA has shown that 23% of parents lacked paid leave when their child is sick (Heymann, Earle & Egleston 1996). This statement adds to the burden on mothers, to take care of their sick child and continue with their daily responsibilities.

In addition to all their normal daily activities, be it work or house-hold chores, the routine to follow the prescriptions from healthcare professionals and the additional nurturing care needed by the child, demands time from mothers. Participants mentioned the difficulty they experienced to administer all the different medication, nebulisation and to take the child to the respective healthcare providers. A Canadian study by Vo, Mitchell, Gooch, Manthena, Holton and Ruff (2014) reported that 88.04% of mothers reported a decreased ability to manage daily activities when taking care of a sick or hospitalised child.

5.2.3 Recurrence and lack of resolution

According to WHO a child under the age of five years can experience four to eight episodes of a LRTI annually (Cohen, Just, Koskas, Bingen, Boucherat, Bourrillon, Foucaud & François 2005). During the interviews two-thirds of mothers mentioned the fact that a LRTI is a recurring condition in their children. This major concern raised by mothers, agrees with the above-mentioned statement. Preventative education such as frequent hand washing and ensuring spaces are well ventilated should be incorporated in treatment approaches.

Despite the recurrence mothers also experienced frustration around the non-resolution of the condition. Parents had thoughts around the possible reason for this recurring

disease, most mothers mentioned it might be the older siblings or crèche attendance. Crèche attendance, second-hand smoking and preterm birth are some of the main risk factors for a LRTI (Jackson, Mathews, Pulanić, Falconer, Rudan, Campbell & Nair 2013). This study had only one premature patient, smoking status of parents was not specified.

5.2.4 Stress and worry

Despite poor sleeping patterns, additional workload, and the frustration around the non-resolution of the disease, most mothers reported feelings of stress and worry while caring for their sick child. Mothers expressed that they were concerned that the child was unable to breathe or the fact that they were still very small. Parents of younger children are generally more concerned about their condition due to the child's inability to communicate effectively and the risk for swift deterioration (Halls et al. 2017). Mothers mentioned that their emotional reaction and treatment strategies during this stressful event was ineffective and more out of a state of desperation and panic, rather than structured and thought through.

5.3 TREATMENT OPTIONS

5.3.1 Self-management

Different treatment options are available for treating children with a LRTI. Some mothers attempted to self-medicate their child at home before seeking help, others were unsure at which point they should consult a professional. Most mothers had a repertoire of medication, nebulisation and suctioning they attempted before consultation. However, they still felt unsure and ineffective in their own management of their child's condition when compared to that of the healthcare professionals. These feelings need to be addressed when educating parents. Mothers that have been through a sick child episode before, re-iterated that they felt more comfortable and equipped to handle the situation due to previous experiences. A recent study mentioned that a previous sickness experience was one of the main guiding factors for parents to gauge severity of their child's disease (Halls et al. 2017).

Mothers utilised different sources of information for guidance, but it was not always beneficial as "you end up touching and going". Sources included advice from other mothers, their parents and reading facts online. The level of knowledge about the condition influences the parent's ability to consider and apply different treatment

options other than antibiotics (Halls et al. 2017). This indirectly influences their experience of their own management.

The age of the child also directly impacts the parents clinical reasoning when to consult a healthcare professional (Halls et al. 2017). Parents are more cautious when it comes to younger children. Children in this study were under the age of three and most were unable to realistically verbalise what was wrong or effectively blow their nose for relief of congestion. Whether or not a child can effectively blow their nose can influence other treatment options such as paediatric chest physiotherapy, as well as whether to include nasal suctioning as part of the treatment regime or not.

5.3.2 Physiotherapy

During the physiotherapy session mothers had conflicting feelings about being present during the treatment session. Some mothers commented how their own reaction during treatment directly influenced the child's perspective either positively or negatively. More than half said they would prefer to be present during the treatment session as it calms the child, others said the child wanted to be with them and prevented the physiotherapist from performing the treatment. In general, most mothers commented that the experience was good. Only one mother strongly advocated against the physiotherapy treatment, especially suctioning, despite her awareness of the positive effects thereof. There was no literature found on the experience or the presence of the parent to compare results, thus personal preference of the parent should prevail.

Most mothers reported initial fear towards the treatment, but after witnessing it or being educated on the process they reported that physiotherapy was cardinal to the treatment regime in treating a LRTI. Studies evaluating the effects of suctioning exist (Fisk 2018; Peyrovi et al. 2014) but none explored the experience of the parent witnessing the suctioning process. In this study mothers reported that witnessing the suctioning was the most traumatic experience during the session, but that this is the technique that made the biggest difference in the child's clinical symptoms. Some mothers stated they would prefer if someone else could be present, because it was tough for a mother to witness it. Mothers felt comforted when their child fell asleep during the rest of the treatment. Some mothers reported initial fear towards the treatment, then reassurance after witnessing the session, this strategy should be considered when encountering new patients.

Parents of children with CF are frequently involved in their child's physiotherapy treatment approach. A recent study by Andrews et al (2020) explored these parents' perspectives towards their involvement and have found that they can positively impact the treatment experience for their children. Thorough education of the parents on the chest physiotherapy treatment and the importance thereof was one of the biggest aids for these parents (Andrews et al. 2020). This statement was in concordance with our study where parents felt more at ease after an explanation or demonstration of the treatment approach. In this study parents were satisfied with feedback after treatment but requested additional information.

Parents enquired about self-continuation after treatment has stopped. However, one mother commented on her own attempts of chest physiotherapy at home being unsuccessful and she preferred specialised care for her child. Other mothers expressed their preference for a physiotherapist skilled in paediatric treatment techniques compared to generalists in the profession. Three mothers commented on the reward system after physiotherapy, the stamp, being sufficient to distract the child from the situation and easily calms them down. No literature on this preference for specialisation or the reward system was found.

5.3.3 Healthcare team

In our study, although mothers attempted their own repertoire of treatments most of them still preferred to consult a medical practitioner sooner than later. This is in contrast with a study by Hay, Anderson, Ingle, Beck and Hollingworth (2019) where only 8% of their study participants immediately consulted primary healthcare for a paediatric respiratory infection. Mothers stated because the child is still so small, they would prefer to take their child to an expert in paediatrics or to a paediatrician. Mothers prefer support and treatment that is specific to their needs, not generalised treatment patterns (Boelsma, Bektas, Wesdorp, Seidell & Dijkstra 2021).

Mothers raised concerns about insufficient time spent by practitioners to purposefully listen to the mother and make an accurate individualised clinical diagnosis. This includes feedback on results and extent of diagnosis. This observation of lack of time and feedback is also mentioned in the study by Hay et al (2019) performed in Bristol, United Kingdom. Parent satisfaction with the consultation is related to thoroughness

and taking the mother's concerns seriously (Halls et al. 2017). Mothers in this study spontaneously mentioned the appreciation they had for healthcare workers that took the time to communicate and care for them beyond the expected treatment. Mothers mentioned the importance of a team they were satisfied with and which they trusted (Boelsma et al. 2021).

5.3.4 Hospital/Emergency Centre

Hospital admission is a stressful experience for any parent of a sick child (Loyland et al. 2019), however results from our study has shown that some parents felt safe when they were admitted to hospital. Only one mother reported she would prefer not to be admitted, the other mothers felt re-assured and comforted to have professionals around them. Mothers did however comment on the disruption of their child's routine in a hospital environment. Conflicting opinions from parents warrants an individualised treatment approach. The two parents that visited the EC said they were unsatisfied with the guidance and treatment they received. The paediatric knowledge, attitude and advice received from medical practitioners working in the EC were the main concerns in their comments.

This agrees with a previous study stating that description of diagnosis, time spent, and attitude of staff influenced the EC experience (Pagnamenta & Benger 2008). Parents prefer healthcare professionals with specific expertise to give them support and guidance (Barimani, Vikström, Rosander, Forslund Frykedal & Berlin 2017), this correlates with the comments from mothers about dissatisfaction with the generalist healthcare staff working in the EC.

5.4 PARENT UNDERSTANDING

5.4.1 About condition and treatment

In this study most mothers were able to identify the symptoms of their child's diagnosis, but they were unable to explain the clinical reasoning behind this presentation or diagnosis. In the study by Halls et al (2017) they have found similar lack of knowledge levels amongst parents about their child's respiratory condition. What mothers were seeking was information from healthcare professionals about the reason for performing tests or treatment procedures, reason for admission, possible medication side-effects and the reason for worsening symptoms. Parents were unaware of the indications for

or the availability of different treatment options available, especially paediatric chest physiotherapy. Incorporating family-centred care principles these questions and uncertainties expressed by mothers should serve as an educational guide for healthcare professionals.

5.4.2 Decision making

Parents play a key role in the management of their child's respiratory condition. In this study most parents felt they were consulted in the decision making process. However, this involvement did not have a positive effect on all parents. Most mothers mentioned they trusted the healthcare professionals more than their own choices. A few mothers expressed strong feelings about them knowing their children the best and requested the team to follow their lead. This concept of a "mother knows best" was observed in a similar study (Halls et al. 2017).

In keeping with the principles of family-centred care parents also play a crucial role in the participation of their child in the treatment process (Shields et al. 2007). A mother can calm her child while receiving chest physiotherapy or easily administer the medication via role play. However, this is not always the case as observed in the interviews conducted. Children and their parents respond differently to certain individuals and different situations. Education from healthcare professionals can equip parents to make an informed decision and feel involved and knowledgeable (Lopes & Dixe 2012). This education should be reinforced especially in the home management of a sick child.

5.4.3 Home management

Despite information about the condition, treatment and the progression thereof mothers requested more information: information about what they should do or continue with at home, how to prevent the symptoms from worsening and what more they could do for their sick child. Some mothers mentioned receiving a poor home management plan after being discharged. Mothers requested more information on how and when to administer the medication. They commented specifically on the sufficient amount of and frequency of administering medication needed to be effective in its purpose. Halls et al (2017) conducted a study in a primary care setting in the United Kingdom and found that the parents reported they received advice for home management which they were already applying before consulting the medical

practitioner. Others reported they were instructed to look out for worsening symptoms or evaluate how long symptoms lasted.

5.5 STRENGTHS AND LIMITATIONS

To our knowledge this was the first study on this topic in South Africa. This study was performed in Gauteng, South Africa in an in-hospital and out-patient setting thus results can be generalised to both populations. However, both these sites service patients on a medical aid and can thus not be generalised to the public/government setting. The small sample size limits generalisability and transferability. All the participants had a matric certificate, this can skew data when applying the same information to more rural areas where levels of education may be lower. All participants were the mother of the child, this limits the generalisability to other caregivers. The upper age limit of children was three years of age and all children received nasopharyngeal suctioning as part of chest physiotherapy treatment. The parent participant might express different attitudes/experiences/concerns if older children are included.

As part of the demographic questionnaire the reason for previous admission was not specified if it was due to a respiratory condition or due to other factors. The question regarding previous physiotherapy should include if the mother was present during previous sessions or not. This can influence their perceptions regarding the management of their child. All participants were the mothers of the child - this can possibly distort the data from a one-sided perspective.

In our study, despite the difficulties accompanied with taking care of a sick child, parents displayed a willingness to perform home management strategies. However, they lacked the confidence and appropriate repertoire to sufficiently treat the child at home. Healthcare professionals can positively impact the experience of the parent's ability to take care of their sick child by offering appropriate and timeous advice.

5.6 RECOMMENDATION FOR FUTURE RESEARCH

Consider conducting a study to explore the attitudes/experiences/concerns from the father's perspective. The involvement of the father could also be further investigated. This study might be reproduced to include other provinces in South Africa or to include the public sector. Consider exploring the financial implication by including a cost-

analysis study. Exploring what the effect of an educational pamphlet or video before treatment will be on the parent's experience of chest physiotherapy. Evaluating how a reward system after physiotherapy will influence the cooperation during follow-up treatments. The preference for a specialist in the field could also be further investigated. Researchers should consider adding more demographic information to the study such as socio-economic circumstances, the order of the patient participant, the family history regarding respiratory conditions and exposure to tobacco smoke. Researchers could consider developing and validating a context specific outcome measure, questionnaire and tool for South Africa and the global South.

5.7 RECOMMENDATIONS FOR CLINICAL PRACTICE

Every child reacts differently to pathogens and to treatment. It is thus recommended that after evaluation, a treatment plan should be individualised and not routinely prescribed. Comprehending the parent's understanding, expectation and previous experience of the condition can be used as a starting point to establish further treatment goals. Most parents expressed the need for more information, thus communication and equipping the family regarding the treatment approach, what to look out for and preventative strategies should be considered. Questions from mothers could serve as an educational guide for healthcare professionals, this can guide the home management program.

Parents should be able to decide if they want to be present during the physiotherapy treatment. Parents prefer a healthcare professional specialised in paediatrics but they request acknowledgement for "the mother knows best" concept from these professionals. The EC should be adapted to cater for the paediatric population as well. Healthcare professionals should consider the financial and time capabilities of the parent when formulating a management plan. An advice pamphlet or educational video regarding the respiratory management should be considered when preparing the parents for the different treatment options available.

Chapter 6 CONCLUSION

This qualitative research study showed the perspective of the parent regarding the management of their child with a LRTI. Overall, the mothers felt ineffective in their own management of their child's disease, and they preferred the assistance from professionals. Mothers expressed frustration about their child's disrupted eating and sleeping patterns, the severe time and financial impact it had on them and their families.

They could not comprehend the recurrence of this illness or the lack of resolution thereof. Some mothers raised the possibility of the crèche and older siblings being the reason for this recurring illness. Mothers felt guilty about their worrying emotions regarding the health of their child, and this influenced their behaviour in positive and negative ways. In contrast, mothers that have been through this sick-child episode before, felt more at ease with the process.

Mothers are the main caregivers during a sickness episode. Most have a repertoire of treatments they attempt at home before taking the child to a medical practitioner. Mothers doubted their own capabilities and would easily be influenced by additional sources of information leaving them "touching and going". Most mothers were satisfied with the physiotherapy treatment and the feedback they received afterwards.

They commented on the nasopharyngeal suctioning technique being the worst part of the treatment but acknowledged that this was the method that brought about the biggest improvement in the clinical symptoms. Only one mother commented on the experience as being traumatising and she would prefer to never go through it again. Different opinions evolved around the presence of the mother during physiotherapy treatment, but most preferred to be present to calm the child. When mothers consulted a professional, they preferred an expert specialised in paediatrics, this refers to the whole healthcare team.

Mothers had strong feelings about insufficient time spent by medical practitioners to listen to their concerns and evaluate the situation with individualised care. They requested more feedback and information regarding the test results but showed appreciation for those healthcare professionals who invested the necessary time. Mothers expressed the need for a good team when it comes to the management of

their sick child. Most of them felt safe when they were admitted to hospital, but then still commented on the disruption of the child's routine.

The EC did not benefit the parents that consulted this service. They requested more guidance and specialised care for their child. Mothers had a general idea to identify the signs and symptoms of their child's condition, but they lacked the knowledge and understanding of the diagnosis. Mothers expressed the need for more information regarding the progression of the disease, indications and possible side-effects of treatment and different treatment options, other than medication available. Possible alarming signs and symptoms or things to look out for was another point of information they requested.

In keeping with the family-centred care principles, equipping the families with knowledge to enable them to decide what works best most mothers felt happy that they were consulted during the decision making process. However, some still commented on their preference for a professional to decide. The general feedback from mothers about the home management advice was poor. Mothers require a take-home plan after being discharged from the hospital or from a healthcare service. There is a need for a step-by-step guide to assist mothers in the activities expected from the respective healthcare professionals.

The encompassing theme of this qualitative study was "it is tough taking care of a sick child". Healthcare professionals should keep this phrase in mind when tailoring an individualised respiratory management plan for each child together with their families'. Factors to consider during the creation of this plan is the personal challenges that both the parent and the child experiences as well as the time and financial implications thereof. Showing empathy towards these challenges can assist in the healthcare professional humanisation principle. The different treatment options available should be discussed and explored in detail according to the level of knowledge of the parent. And finally, the level of the parent understanding should be used as a starting point for caregiver education and formulating a home management plan.

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APPENDICES

Appendix 1 Information sheet



Hello Sir / Madam,

My name is Danielle Foot and I am a Masters student in Physiotherapy at the University of the Witwatersrand, Johannesburg. As part of my studies, I must undertake a research project, and I am investigating parents of children referred for chest physiotherapy under the supervision of Prof Joanne Potterton. The aim of this research project is to determine the attitudes, experiences, and concerns of parents of children aged under three years with lower respiratory tract infections, regarding the respiratory management.

As part of this project, I would like to invite you to take part in a once-off interview and complete a demographic information form. This activity will involve completing a form and answering some questions and it will take around 30 minutes. With your permission, I would also like to audio record the face-to-face interview using a digital device. All Covid-19 safety measures will be in place. If Covid-19 limits a face-to-face interview, we will use Microsoft Teams as a platform to conduct the interview. Both participant and researcher's cameras will be turned off. This recording will be stored on a password protected single use computer and only the researcher will have access to this recording. It will be deleted after 6 years, if not used for further studies in an anonymized format after this project has ended, for academic purposes by other researchers, subject to their own ethics clearance being obtained.

There will be no personal costs to you if you participate in this project, you will not receive any direct benefits from participation, but there are no disadvantages or penalties if you do not choose to participate, or if you withdraw from the study. Travel allowance and data costs will be reimbursed. You may withdraw at any time, and you may choose not to answer any question posed to you. The child will receive chest physiotherapy regardless of your participation in the study. The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and

not disclosed to anyone else. I will be using a pseudonym (false name) to represent your and your child's participation in my final research report.

If you experience any distress or discomfort at any point in this process, we will stop the interview or resume another time. If you need some support or counselling services following the interview, I will refer you to a counselling psychologist at Intercare Mall@55. The name of the counsellor is Alexandra Norton and her contact details for the counselling service is 084 581 2153. She is available on Mondays, Wednesdays, and Fridays from 8:30-15:30.

If you have any questions during or afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report. If you wish to receive a summary of this report, I will be happy to send it to you. The data collected from this research project will be stored in a password protected single use computer and only the researcher will have access to this recording, and it will be kept for 6 years if not published. With your permission the data collected from this research project may be used by other researchers, in an anonymized format for academic purposes, subject to their own ethics clearance being obtained.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Yours sincerely,

June 2021

Danielle Foot

Researcher: Danielle Foot 704754@students.wits.ac.za 082 5642693

Supervisor: Joanne Potterton, joanne.potterton@wits.ac.za, 011 7173718

Appendix 2 Consent form: participation and audio-recording



PARTICIPATION CONSENT FORM

Title of project: *Attitudes, experiences, and concerns of parents of children aged under three years with lower respiratory tract infections, regarding respiratory management.*

- I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;
- I was given time to read it, or had it read to me, in the language I best understand;
- I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;
- I believe I fully understand why the study is being conducted and what the intended outcomes will be;
- I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time; Data and Travel cost will be reimbursed
- I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained
- With your permission the data collected from this research project may be used by other researchers, in an anonymized format for academic purposes, subject to their own ethics clearance being obtained
- I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study I am free to speak to any of these contacts.

Researcher: Danielle Foot; 704754@students.wits.ac.za ;082 5642693

Supervisor: Joanne Potterton, joanne.potterton@wits.ac.za 011 7173718

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za. Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Participant nr:

Name of Participant: _____

Date: _____

Place: _____

Signature or mark _____

Witnessed by:

Name of Witness: _____

Signature: _____

Date: _____

September 2021



CONSENT FORM FOR AUDIO RECORDING OF STUDY PARTICIPATION

Title of project: The a*ttitudes, experiences, and concerns of parents of children aged under three years with lower respiratory tract infections, regarding respiratory management.*

I hereby consent to audio recording of the interview.

I understand that:

- The recording will be stored in a secure location (a password protected computer) with restricted access to the researcher and the research supervisor.
- The recording will be transcribed and any information that could identify me or my child will be removed,
- The recordings will be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years, if no publications arise from this research
- If a Microsoft Teams meeting is used to conduct the interview due to Covid-19 adaptations, both researcher and participants' cameras will be switched off.
- Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
- Direct quotes from my interview, without any information that could identify me or my child, may be cited in the research report or other write-ups of research.

Researcher: Danielle Foot; 704754@students.wits.ac.za ;082 5642693

Supervisor: Joanne Potterton, joanne.potterton@wits.ac.za 011 7173718

Participant nr:

Name of Participant: _____

Date: _____

Place: _____

Signature or mark _____

Witnessed by:

Name of Witness: _____

Signature: _____

Date: _____

September 2021

Appendix 3 Demographic questionnaire



Participant nr:

Hello Sir/Madam

Please complete this demographic questionnaire. All information will be kept anonymous. Title of the study: *The attitudes, experiences, and concerns of parents of children aged under three years with lower respiratory tract infections, regarding respiratory management.*

1-What is your relationship to the patient?

_____

2-How old are you?

_____

3-What is your education level. Pre-matric, matric, or tertiary qualification?

_____

4-How old is the patient?

_____

5-Was the patient born on term or prematurely?

_____

6-Is the patient admitted to hospital or are you attending an out-patient practice?

_____

7- What is the patient's diagnosis?

_____

8- Is the patient the only child or does he/she have other siblings? If applicable how old are they?

_____

9-Have you attended a chest physiotherapy session prior to this episode of sickness? If so, how many sessions?

_____

10-Is the patient attending a crèche/day-care?

_____

11-Has the patient been admitted to hospital before?

_____

Appendix 4 Interview schedule

Danielle Foot

704754

Title: *The attitudes, experiences, and concerns of parents of children aged under three years with lower respiratory tract infections, regarding respiratory management.*

Question 1:

Tell me more about the child and your experience while looking after him/her with a LRTI. What do you think is wrong?

Question 2:

How do you feel about the management of your child's LRTI, your own management and that of the healthcare professionals? Do you have any concerns regarding this management? How do you feel about your child's experience with chest physiotherapy-specifically what was your experience witnessing it?

Question 3:

Is the anything that you would like to know about your child's management regarding the LRTI?

Question 4:

Are there any suggestions that you have or additional information you would like to know regarding your child's respiratory management?

Appendix 5 Ethical clearance certificate

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R49 Ms D Foot

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M210722

NAME: (Principal Investigator)	Ms D Foot
DEPARTMENT:	School of Therapeutic Sciences Department of Physiotherapy Medical School University
PROJECT TITLE:	*The attitudes, experiences and concerns of parents of children aged under three years old, with lower respiratory tract infections, regarding respiratory management*
DATE CONSIDERED:	2021/07/30
DECISION:	Approved unconditionally
CONDITIONS:	
NOTE:	If contact information regarding student study participants is required, please contact the Registrar's office - <Nicoleen.Potgieter@wits.ac.za>
SUPERVISOR:	Professor J Potterton
APPROVED BY:	CB Penny Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2021/11/22

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office secretariat on the 3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in July and therefore reports and re-certification will be due in the month of **July** each year. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).

Signature of Principal Investigator

2021/11/22
Date

Appendix 6 Distress protocol

Study title: The *attitudes, experiences, and concerns of parents of children aged under three years with lower respiratory tract infections, regarding respiratory management.*

This study poses a low risk for emotional distress. During the interview if a participant becomes emotionally distressed a referral protocol is in place. The interview will be stopped, and a referral will be given to a counselling psychologist if the participant wishes to.

Alexandra Norton counselling Psychologist: 084 581 2153.

Address: Intercare Mall@55, Monavoni, Centurion.

An estimated fee of R500 for a 60min consultation is payable by the researcher if they wish to make use of this service.

Danielle Foot

704754@wits.ac.za

0825642693

Appendix 7 Site permission forms

Wilna Foot Physiotherapy

Wilna Foot
BSc. Physiotherapy (Stell.)
Physiotherapist / Fisioterapeut
Indeks Nr, PT036366/PR7219849

Wierda Med
Theuns van Niekerkstr 398
Posbus 51447
Wierda Park 0149

Tel: (W) 012 653 4406
Nood Tel: 082 416 721

28 June 2021

Dear Danielle Foot (704754)

Re Permission to conduct research at Wilna Foot Physiotherapists

Title: Exploring the attitudes, experiences, and concerns of parents of children with lower respiratory tract infections aged under three, regarding respiratory management.

Above mentioned student may perform research at Wilna Foot Physiotherapists pertaining to proof of ethical clearance certificate.

Kind regards

Wilna Foot
BSc. Physiotherapy (Stell.)
Physiotherapist / Fisioterapeut
Indeks Nr, PT03636/PR7219849
Tel no: (012) 653 4406
Fax no: 086 502 4441
Emergency no: 082 416 7213

Mediclinic Midstream

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MEDICLINIC CORPORATE OFFICE
25 DU TOIT STREET
STELLENBOSCH
7600

PO BOX 456
STELLENBOSCH
7599

T +27 21 809 6500

www.mediclinic.co.za

Our ref: 20211027 - Miss Daniel Foot - Mediclinic Midstream

Date: 8 February 2022
Ms Danielle Foot
E-mail: danielle.foot@gmail.com
Copies to: joanne.potterton@wits.ac.za; shane.kotze@mediclinic.co.za

Dear Ms Foot,

APPROVAL TO CONDUCT RESEARCH USING AT MEDICLINIC MIDSTREAM

Your research proposal entitled "The attitudes, experiences, and concerns of parents of children aged under three years old, with lower respiratory tract infections, regarding respiratory management" refers.

1. **Academic Institution:** University of Witwatersrand
2. **Degree level**: Masters
3. **Study aim:** To explore attitudes, experiences, and concerns of parents of children under three years old with lower respiratory tract infections, regarding respiratory management.
4. **Study design and methodology:** Qualitative exploratory study using semi-structured interviews.
5. **Mediclinic contact person:** Amanda Hyman, Group Research Coordinator
6. **Access conditions:** Access to the hospital and wards to recruit potential participants should be agreed with the Hospital General Manager, Shane Kotze. All hospital protocols, including COVID-19 protocols, must be adhered to.

Kindly submit a written summary/closing report to the committee within 30 days of the study end date stipulated in the confidentiality and data processing agreement (CDPA). Should your research period surpass the initial period indicated in the protocol ending, you will be required to apply for an extension.

We wish you the very best with your study.

Yours sincerely,

DR MELANIE STANDER
Acting Chair: Clinical research Review Committee

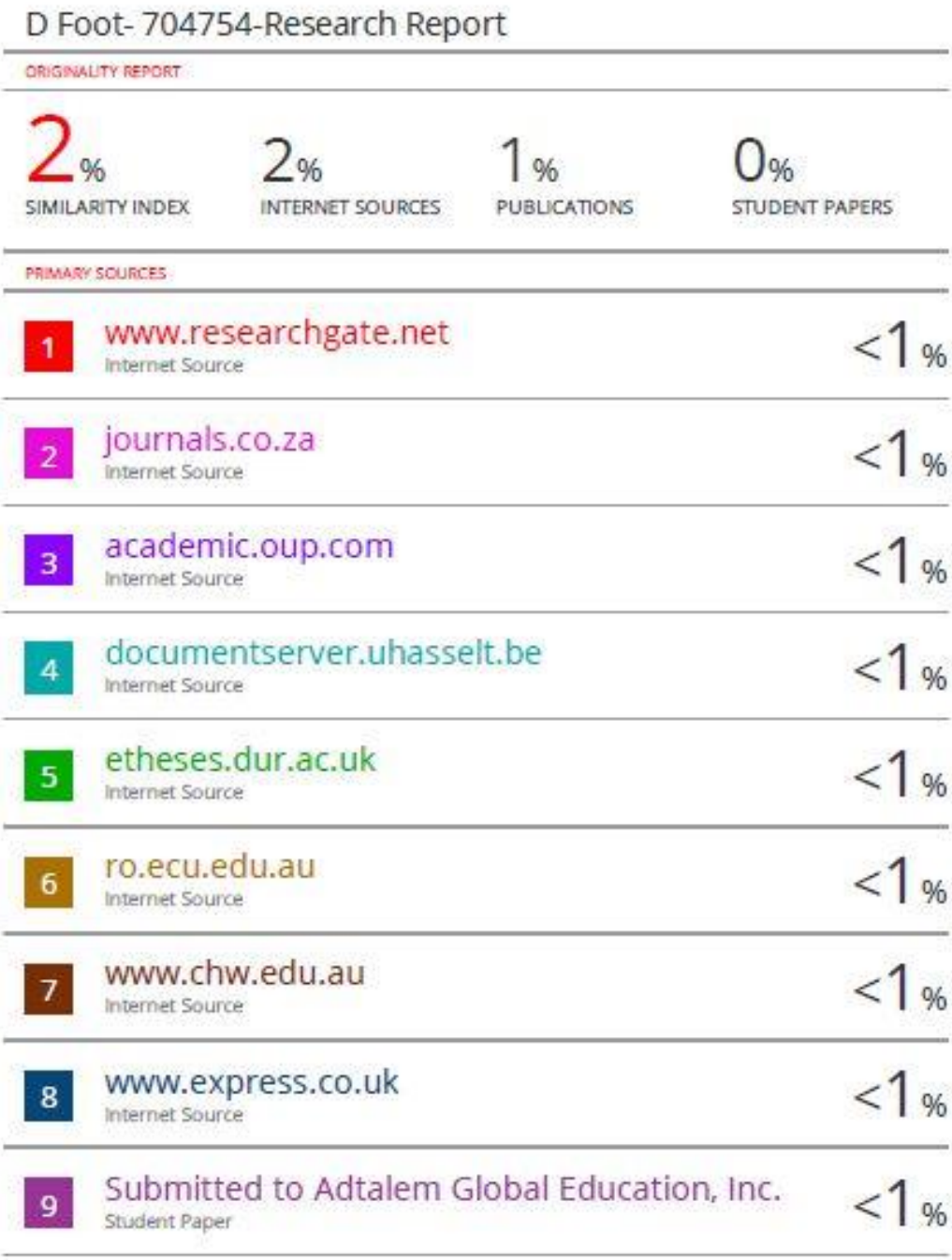
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Appendix 8 Turnitin report



D Foot- 704754-Research Report

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