

PROFILE OF AND CAREGIVER EXPERIENCES OF INFANTS WITH OBSTETRIC ERB'S PALSY TREATED AT A TERTIARY INSTITUTION

KHADIJA ABUARABA

3376370

A thesis submitted in partial fulfilment of the requirements for a Master's Degree in Physiotherapy in the
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SUPERVISOR

PROF A. RHODA

UNIVERSITY OF THE WESTERN CAPE

Faculty of Community and Health Sciences

KEY WORDS

Erb's Palsy

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Rehabilitation

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ABSTRACT

Background: Erb's Palsy results from excessive displacement of the head during birth causing traction on the Brachial plexus. In order to define optimal management for Erb's Palsy, reliable data is needed. **Aim:** The aim of the study was therefore to determine the profile of and caregiver experiences of infants with Erb's Palsy seen at Groote Schuur Hospital. **Method:** The study was carried out at Groote Schuur Hospital (GHS) in the Western Cape, South Africa. The study used both quantitative and qualitative approaches. A record review was conducted to collect quantitative data which was retrieved from patient files and captured on a data extraction sheet. A convenient sample of caregivers of children with Erb's Palsy were recruited and interviewed for the qualitative component of the study. Quantitative data was analyzed and presented in tables, figures and qualitative data was analyzed thematic and presented narratively. Ethical approval was obtained from the Ethics Committee at the University of the Western Cape and the University of Cape Town. In addition, permission was obtained from the hospital management. **Results:** The total sample size for the quantitative part was ninety-six (96) files of children with Erb's Palsy. The mean age of the study sample was 3.8 months. The majority (53.1%) of the participants received a mean of 4.1 (SD=1.7) physiotherapy session. In the qualitative phase eight participants were interviewed. Analysis of qualitative data yielded three themes including "experience of mothers as it relates to Erb's Palsy", "mothers' engagement with health care providers" and "personal and environmental factors". **Conclusion:** The study within this setting indicated that Erb's Palsy was most common among females. The most common documented forms of physiotherapy techniques provided for children with Erb's Palsy in setting were stretching and strengthening exercises as well as therapeutic massage. exercise. Caring for a

child with Erb's Palsy resulted in emotional challenges experienced by the mothers of these children.



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DECLARATION

I hereby declare that “**PROFILE OF AND CAREGIVER EXPERIENCES OF INFANTS WITH OBSTETRIC ERB’S PALSY TREATED AT A TERTIARY INSTITUTION**” is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources used or quoted have been indicated and acknowledged by complete references.

Khadija Abuaraba

Signature: *K. Abuaraba*



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November, 2016

Witness: *A. Rhoda*

Professor Anthea Rhoda

DEDICATION

I dedicate this thesis to my wonderful family (Abdulaziz and my twins Mohamed and Aisha) who encouraged and supported me in this difficult time, and my family (dad's soul, mom, brothers and sisters) who always believed in me, provided me with the love and constant support that was needed to complete my work. May God continue to bless you all.



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Additionally, I would like to acknowledge and thank the caregivers who shared their experiences of caring for their children with me.

I also extend special thanks to all who assisted me in one way or the other.

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ABBREVIATIONS

BPI – Brachial Plexus Injury

CIMT- Constraint Induced Movement Therapy

C6-C5 – Fifth and Sixth Cervical Nerves

EP – Erb’s Palsy

FCS- Family-Centred Service

FES – Functional Electrical Stimulation

GDM - Gestational Diabetic Mellitus

GSH – Groote Schuur Hospital

H0 - Social Insurance or unemployed = fully subsidized

H1- Less than R36 000 per annum

H2- Less than R50 000 per annum

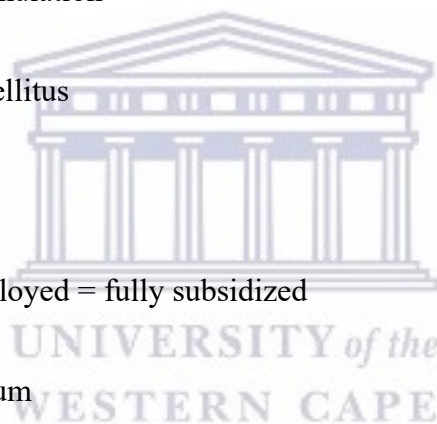
H3- As gazette (Private self-funded)

HCP - Health Care Professional

ICF - International Classifications Functional

MCIMT - Modified Constrained Induced Movement Therapy

MRI - Magnetic Resonance Imaging



ROM - Range of Motion

SD - Shoulder Dystocia

SPSS – Statistical Package for Social Science

T1 – First Thoracic Vertebra

UCT – University of Cape Town

UK – United Kingdom

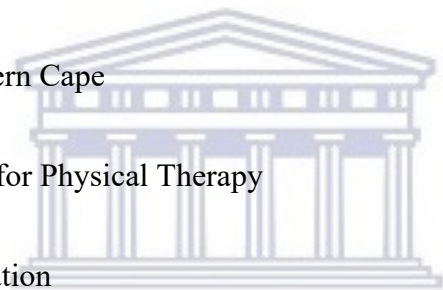
USA – United State of America

UWC – University of the Western Cape

WCPT – World Confederation for Physical Therapy

WHO – World Health Organization

% - Percentage

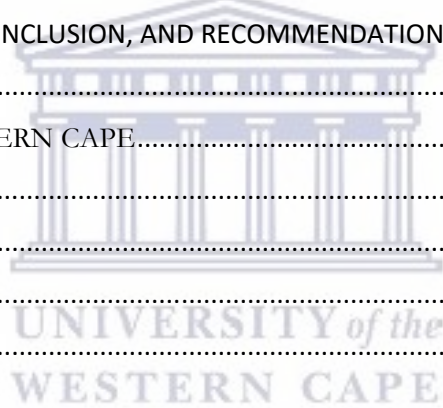


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CHAPTER ONE

INTRODUCTION

1.1 Introduction to the chapter

This chapter focuses on the background of the study. It presents a profile of children with Erb's Palsy as well as experiences of mothers with children with Erb's Palsy, highlighting for the study, the problem statement, the research question, the aim, objectives and the definitions of the key terms used in the study. This chapter ends with an outline of chapters.

1.2 Background of the study

Erb's Palsy was first described by the Scottish obstetrician William Smellie in an article for midwives in the 1764. However, it was not until a century later (1872 and 1875) that a clinical description of the condition was presented by the French neurologist Guillaume Duchenne and the German professor of neurology Wilhelm Erb (Mollberg, 2007). These authors described Erb's Palsy as an injury primarily involving the C5-C6 (the upper trunk) and sometimes the C7 (the middle trunk) of the brachial plexus. Since the early 1990s, research has increased the understanding of Erb's Palsy (Strömbeck, Krumlinde-Sundholm., Remahl & Sejersen., 2007).

In doing so research has provided some indication of the cause of the injury. It has been reported that Erb's Palsy occur as result poor handling of the new born during or after delivery (Ming, Dong, Jun, Yu & Xin, 2012). The force used during the delivery can result in injury to the brachial plexus, which is anatomically located at C5 to C6, through to the first thoracic root (T1). The brachial plexus becomes impaired when there is a sustained stretch on the infant's neck in one direction (Ming et al., 2012). An example is when there is extreme pulling on the shoulders

during delivery, or when the infant's head and neck are pulled toward the side at the same time as the shoulders pass through the birth canal. Although the C5-C6 segments are usually the most commonly and severely affected (Singh & Kolamala. 2015), C7 is sometimes also affected, with this Brachial Plexus injury being referred to as Erb's Palsy.

The incidence of Erb's Palsy differs from country to country. The incidence of Erb's Palsy ranges from 0.38 to 3 per 1 000 live births and constituted the second highest category of payouts in obstetric malpractice suits (after asphyxia) in the United Kingdom (UK) between 2000 and 2010 (Steer, 2014). It is estimated that 5 420 new cases of Erb's Palsy occur each year in the United States (Nixon & Trail, 2013). The United States has demonstrated a decreasing incidence over time. In the United State of America (USA) this incidence decreased from 1.7 per 1 000 live births in 1997 to 1.3 per 1 000 lives in 2003. The decrease in the incidence could be as a result of the improvements in the management of Erb's Palsy, which could have lowered the incidence of Erb's Palsy to reach the range of 1.3 per 1 000, or due to differences in investigated populations (Zefeiriou & Psychogiou, 2008). However, higher and somewhat increasing incidences have been found in various European studies such as in Sweden and countries with good maternity care (Westin, Buchhave, Nielsen, Minthon, Janciauskiene & Hansson, 2012). In these European countries, the incidence ranges from 3 per 1 000 live births in Norway and 3.3 per 1 000 live births in the Netherlands (Spaargare, Ahmed, Willem, Ouwerkerk, de Groot & Beckerman, 2011). According to Hoeksma & Wolf (2000) who stated that the incidence of Erb's Palsy is between 15 million in countries with well-developed obstetric services, in Sweden it was recorded that the incidence of Erb's Palsy has increased from 1 per 1000 in 1973 to about 2.5 per 1000 in 2003 according to Swedish medical birth register. The authors report that this increase in

Sweden was possibly due to an increase in mean birth weight of the infants at birth. In developing countries, an increasing incidence of Erb's Palsy in the last few years has also been noted (Walsh, Kandamany, Shuibhne, Power, Murphy & Herlihy 2011). These authors relate this increase to late referral of mothers who are in need to give birth to hospitals, which has been seen to relate to increase in continuous rate of Erb's Palsy. Ugboma & Omojunikanbi, (2010) found in their study in Nigeria a total percentage of late referrals (71%). Available data from South Africa, published a decade ago, indicated that two out of every 1000 new born babies are born with Erb's Palsy (Basciani & Intiso, 2006).

Erb's Palsy is an important cause of disability in children and adults (Watt, Niederbichler & Yang 2007). The extent and reversibility of the lesion does not differ with respect to characteristics of mothers, foetuses or deliveries (ElKhatib, ElNegmy, Salem, & Sherief, 2013). In some cases, children with Erb's Palsy experience complete recovery (Lindqvist., Erichs., Molna., Gudmundsson & Dahlin 2012). Global injuries (C5-T1) usually result in permanent disability. Ugboma and Omojunikanbi, (2010) stated that the majority of children with the injury have a better chance to recover during the first few weeks of life with either no deficit or a minor functional deficit, while some do not regain adequate limb functions.

Composing a profile of infants with Erb's Palsy would provide data that could be used to develop appropriate management strategies (Alfonso, 2011). A profile includes a summary of characteristics of somebody or something (Spaargaren, Ahmed, Willem, Ouwerkerk, de Groot & Beckerman, 2011). A profile of children with Erb's Palsy would include their demographic characteristics, risk factors associated with the condition, clinical picture of the children and the management of the condition. During the last decades, numerous data have been published on risk factors for Erb's Palsy (Chater, Camfield, & Camfield, 2004), but there is paucity of

research done in South Africa on this condition. Risk factors in Erb's Palsy include fetal factors, maternal factors and factors related to labour. The most common fetal risk factor is macrosomia (Pondaag, Allen & Malessy, 2011). Raised maternal Body Mass Index at term and presence of gestational diabetes mellitus have been reported as maternal risk factors (Weizsaecker, Deaver & Cohen, 2007). Risk factors associated with the labour process includes shoulder dystonia, induction of labour, prolonged second stage of labour, mode of delivery and assisted vaginal delivery (Wolf, Hoeksma., Oei & Bleker, 2000).

The clinical picture of Erb's Palsy differs greatly depending on the severity of the injury. In most of the cases, the child could have weakness, loss of sensation and atrophy in the affected arm (Malessy & Pondaag, 2009). The management of the condition includes surgical as well as conservative management. Surgery can involve neurolysis to remove any scar tissue and nerve grafting with transplant of another nerve or nerve transfer from a local functioning nerve (Kirjavainen, Remes & Peltonen, 2007).

Conservative management of this condition mainly includes physiotherapy. Physiotherapy management of children with Erb's Palsy focuses mainly on preventing contractures, increasing the child's awareness of the affected arm and improving muscle strength (Taniguchi, Heest & Partington, 2009). A systematic review conducted by Bialocerkowski., Kurlowicz, Vladusci in 2007, investigated the effectiveness of the following physiotherapy techniques: "gentle regular exercise; passive range of motion development; strengthening exercises; active and passive movement; home exercise programs; splints; general occupational therapy and physiotherapy".

The main outcome that was investigated in this review was recovery. The authors however reported that there was no conclusive evidence for the effectiveness of the techniques included in their review to improve recovery.

Children with Erb's Palsy are dependent on caregivers to assist with their daily functioning. It is therefore important to include the experiences of the caregivers when compiling a profile which would inform management. These caregivers often experience a number of challenges, which include psychological and physical challenges and making sacrifices as a result of caring for a child with a disability (Brehaut et al., 2004). Mothers often experience depression which is correlated with the level of impairment and recovery. As the children recover the depression experienced by the mothers becomes less.

. 1.3 Problem statement

Erb's Palsy is a common condition in children which could occur due to difficulty in delivery. It can lead to lifelong disability, depending on the nature and extent of the damage (Louis, Sundaram & Samujh, 2010). Children with Erb's Palsy continue to be referred to physiotherapy. The physiotherapy services are often provided on an out-patient basis. In developing countries such as South Africa, the mothers often have to travel long distances to access these services. This may affect their ability to attend follow-up sessions or they can only attend limited follow-up sessions. It is therefore important that the interventions provided facilitate recovery and include the mothers, as they would have to implement follow-up treatment at home. To ensure that interventions implemented are appropriate, information about the population for whom the services are being provided needs to be available. There is currently limited published literature about children with

Erb's Palsy's clinical picture, management and caregivers' experiences in a developing country such as South Africa. Information needed to ensure that the interventions are appropriate. This

study therefore aims to determine the profile of caregiver experiences of infants with Erb's Palsy and the experiences of caregivers' caring for these children.

1.4 Research questions

1. What is the profile of infants with obstetric Erb's Palsy treated managed at Groote Schuur Hospital?
2. What are the experiences of caregiver of infants with obstetric Erb's Palsy managed at Groote Schuur Hospital?

1.5 Aim of the study

The aim of the study was to determine the profile of and caregiver experiences of infants with Erb's Palsy managed at Groote Schuur Hospital in the Western Cape.

1.6 Objectives of the study was to:

1.6.1 Describe the profile of children with Erb's Palsy admitted to Groote Schuur Hospital in the Western Cape.

1.6.1.1 Describe the socio-demographic profile (age, gender) of children with Erb's Palsy admitted to Groote Schuur Hospital in the Western Cape.

1.6.1.2 Describe the clinical picture of children with Erb's Palsy (site of impairment, level of impairment) admitted to Groote Schuur Hospital in the Western Cape.

1.6.2. Describe the current medical and physiotherapy management of children with Erb's Palsy admitted to Groote Schuur Hospital in the Western Cape.

1.6.3. Explore the experiences of caregivers', while caring for a child with Erb's Palsy.

1.7 Definitions of key terms

Erb's Palsy: is a specific kind of brachial plexus palsy which causes weakness or loss of motion in the arm of the newborn child (Louis et al., 2010). It is usually the result of a difficulty during child delivery.

Clinical picture: diagnosed at birth or shortly afterward, the clinical picture can be observed based on history and physical examination findings (Scarpignato & Hunt, 2010). The clinical picture includes quality of movement, amount of use and willingness to use the affected extremity.

Impairment: is the loss or abnormality of movement, nerve, physiological or anatomical structure or function; this term includes all losses or abnormalities, not just those attributable to the initial patho-physiology, and it also includes pain as a limiting experience (WHO, 2001).

Physiotherapy: is the treatment and rehabilitation of disease conditions, deformities (either congenital or acquired) (Wickford & Duttine, 2013). Such physical means can be in the form of physical exercise; massage; manipulations; the use of a variety of physical agents such as water at therapeutic temperatures; lights or radiations; heat including moist, dry and radiant heat as in thermotherapy; electricity including the use of low, medium and high frequency electrical currents (Bury & Stokesa, 2013); low temperature media such as ice or as can be effected by some chemicals; applied mechanical and electro-mechanical appliances, including applied supportive gadgets; and the use of sound waves including ultrasonic energy (Richardson,2002).

Medical management: is used in different contexts and has several meanings (Philandrianos, Baiada, Salazard, Benaim, Casanova, Magalon & Legre, 2013). Medical management in this study includes medications given to the affected child.

Caregiver: is used in this study to mean any person close to the children with Erb's Palsy and providing direct care to them on a day-to-day basis (Teel, Pamela & Min, 2001).

1.8 Outline of chapters

Chapter One describes the basis of the current study. This begins with a description of the background of the current study, in which the history, incidence of Erb's Palsy and the motivation for study is highlighted. It is followed by the problem statement, research questions, aim and objectives of the study. The chapter ends with the definitions of terms used in the study.

Chapter Two presents an extensive literature review that was carried out to report the current trend in the incidence of Erb's Palsy and its associated risk factors. Detailed accounts of the use of physiotherapy, surgery intervention and management of Erb's Palsy are provided.

Chapter Three provides all methodological steps taken toward achieving the objectives of this study. This chapter gives a detailed description of the methodology employed in conducting this study. A broad description of the quantitative part, the research setting, population, study design, data collection procedures as well as data analysis are all explained. A broad description of the qualitative data collection procedure, trustworthiness, qualitative analysis, as well as the ethical considerations pertaining to the study is also outlined.

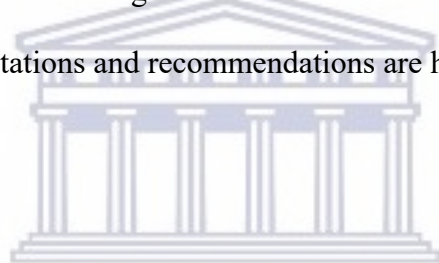
Chapter Four presents the results of the quantitative phase of the study. Ranges, means, standard deviations, frequencies and percentages are used to present descriptive statistics while the correlation tests are used to test associations between certain variables.

Chapter Five presents the discussion of the results of the quantitative analysis.

Chapter Six presents and discusses the qualitative results. In this chapter, the categories and themes that emerged are presented. The discussion centers on an attempt to interpret the current study findings, and a comparison of the study results is made with similar studies.

Chapter Seven focuses on pulling together the results of various phases of this study to achieve the primary aim of the study, by discussing issues that emanated from each phase of the study.

Conclusions are drawn and limitations and recommendations are highlighted.



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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of the literature relevant to this research study. This section includes the incidence of Erb's Palsy, the risk factors, the description of the condition and complications, the recovery and prognosis; with the management of Erb's Palsy which will be focusing on clinical examination, surgical and conservative of management Erb's Palsy.

Experiences of caregivers of children with disabilities are also included.

2.2 Risk factors

Risk factors for Erb's Palsy fall mainly into three categories which include: the fetal, maternal and obstetric risk factors.

fetal Risk Factor

According to Foad, Mehlman, & Ying (2008), fetal risk factors are factors related to the foetus. The most common foetal risk factor is macrosomia. Macrosomia varies between post birth weight of 4kg or more for normal mothers or alternatively 4.5kg for diabetic mother without consideration on gestational age. Delivery of a foetus with macrosomia is often preceded by labour dysfunctions, mainly in the second stage of labour it is often associated with a compaction of shoulder dystocia (SD) that could lead to the occurrence of Erb's Palsy (Pondaag, Allen & Malessy, 2011). Other less frequent but pathogenically revealing foetal risk factors include decreased foetal arm movements and the presence of a first cervical rib and clavicular fracture (Pondaag et al., 2011). Decreased arm movements may lead to atrophy of the shoulder girdle

muscles and joints, thus rendering the brachial plexus more vulnerable to stretch forces. Decreased foetal arm movement may be due to uterine constraint or central nervous system pathology associated with arm weakness (Foad et al., 2008). The presence of a cervical rib may modify the anatomy of the region around the brachial plexus could alter the direction of the vector of the stretching force, thereby, increasing its alignment to the axis of the most vulnerable brachial plexus bundle.

Maternal Risk factors

The maternal risk factors include obesity, Diabetic mellitus, excessive weight gain, Primiparity, multiparous mother, and previous child with Erb's Palsy (Ouzounian & Gherman, 2005).

Obesity is measured by Body Mass Index which can be classified as obesity ranging from 25 kg/m² as overweight and ≥ 30 kg/m² as obese. Obesity makes delivery complicated and can cause shoulder dystocia during delivery therefore, the child from obese mother is at risk of having Erb's Palsy (Sandmire & Demott, 2002). A study on maternal obesity in early pregnancy and risk of spontaneous and elective preterm deliveries suggested that obese nulliparous women are at an increased risk of elective preterm deliveries and increased perinatal mortality. The offspring, which includes children with Erb's Palsy, of these mothers are equally at an increased risk of longterm disabilities (Smith, Shah, Pell, Crossley & Dobbie, 2007)

Gestational Diabetic Mellitus (GDM) is also a maternal risk factor due to the fact that the infant s of these mothers are at risk of weighing 4000g which makes the delivery in these cases more difficult (Pondaag, Allen & Malessy, 2011). One of the common adverse outcomes of GDM is foetal macrosomia which occurs if GDM is poorly recognized and therefore, untreated. In infants it increases the risk for shoulder dystocia, clavicular fractures and brachial plexus injury, as infants of women with GDM are at increased risk of becoming overweight or obese (Kc, Shakya & Zhang, 2015).

Weight gain is gaining weight more than recommended for the pregnant woman, these recommended weight are: 12.5-18 kg for underweight women in the beginning of pregnancy, 11.5-16 kg for women with normal weight, 7-11.5 kg for overweight and 6.5kg for obese woman (Mehta, Siega-Riz & Herring, 2011). Excessive weight gains more than recommended during pregnancy increases the risk of having Erb's Palsy during the delivery (Mehta et al., 2011).

In the past there was an assumption that primiparous women are at an increased risk of having a child with Erb's palsy (Pondaag, Allen & Malessy, 2011), however a very recent evidence suggests that brachial plexus injuries occurred as frequently in multiparous patients as in nulliparous patients (Clapp, Bsat, Little, Zera, Smith & Robinson, 2016). The study argued that great birth weight, maternal diabetes shoulder dystocia, prolonged labour and advanced maternal age are among the risk factors for brachial plexus injury. It is suggested that the likelihood for bigger babies are often underestimated by doctors, which may account for the previous assumption that nulliparous women are at an increased risk of having children with brachial plexus injuries (Mollberg, Hagberg, Bager, Lilja & Ladfors, 2005).

Obstetric risk factors

The risks associated with obstetric factors includes shoulder dystonia, induction of labour, prolonged second stage of labour, mode of delivery and assisted vaginal delivery (Wolf, Hoeksma., Oei & Bleker, 2000).

Shoulder dystocia: it is technically more difficult to deliver the shoulders and the delivery dynamics are different, compared to the normal (Wolf et al., 2000). Factors associated with shoulder dystocia include post-term delivery, assisted vaginal delivery, and many investigators focus on attempting to prevent shoulder dystocia rather than on the risks linked to obstetric manoeuvres to free the impacted shoulder (Jevitt, 2010). Much of the understanding and

knowledge of shoulder dystocia is based on empirical observations; according to Wolf et al (2000) an estimated 45% of Erb's Palsy injuries are associated with shoulder dystocia. It is thought that Erb's Palsy can be caused by such conditions in the mother as: familial congenital brachial plexus palsy, maternal uterine malformation, congenital varicella syndrome, osteomyelitis involving the proximal head of the humours or cervical vertebral bodies, exostosis of the first rib, tumours and haemangioma in the region of the brachial plexus, and intrauterine maladaptation (Alfonso, 2011). Shoulder dystocia and instrumented delivery increase the stretch force brought upon the brachial plexus as a consequence of propulsive forces, traction forces, or both; thereby, leading to injury. **Prolonged second stage of labour:** the time period from which the mother begun having strongest birth contraction to the time of delivering the head of the foetus, if it is mostly beyond 20 minutes it is considered as a prolonged second stage of labour (Foad et al 2008 Donnelly, Foran, Murphy, McParland, Keane & O'Herlihy, 2002).

If the second stage of labour was said to be shorter than 20 minutes, this can prevent occurrence of Erb's Palsy (Mehta et al., 2006).

Mode of delivery: this is the way of delivering the baby whether it was spontaneous vaginal delivery or by caesarean section. Vaginal delivery can be with instruments or non-instruments (Hudic, Fatusic', Sinanovic' & Skokic, 2006). The instruments for vaginal delivery include use the forceps or vacuum extractor or episiotomy found to be a higher in Erb's Palsy cases (Foad et al, 2008; Tandon & Tandon 2005).

2.3 Clinical Picture of Erb's Palsy

The impact of Erb's Palsy can be conceptualized by the International Classification of Functioning Disability and Health (ICF), which "provides a comprehensive conceptual

framework and a unified standardised language to describe health and health related states, both at the individual, as well as at population levels (WHO, 2001). Functioning is an umbrella term for intact body functions and body structures, activities and participation. Functioning denotes the positive or neutral outcome of the bi-directional complex interaction between an individual with a health condition and his or her context. The complementary term disability is an umbrella term to denote impairments of body functions and structures, activity limitations and participation restrictions. Disability is the negative outcome of the interaction between an individual with a health condition and his or her context (WHO, 2001). Many children who develop injuries to the brachial plexus during birth experience major impairments, functional limitations and participation restrictions as a result of a variety of sequelae which affect the upper limb (Sandmire & Demott, 2008). The impairments that occur as a result of Erb's Palsy include posterior subluxation or dislocation of the humeral head, winging of the scapula, forearm deformities such as pronation or supination contractures, hand deformities, and hypoplasia of the bones in the upper extremity resulting in limb length discrepancy problems (Yang, 2012). Two well-described secondary deformities are the medial rotation contracture of the arm and the fixed supination deformity of the forearm (Yang, 2012). The medial rotation contracture is a major cause of shoulder deformity in children with Erb's Palsy. The functional limitations which mainly manifest as diminished functional activities in the hand, is usually observed in the first two weeks of delivery. These functional limitations often limit the child's ability to socially engage with other children in play activities (Drummond, Sampaio, Mancini, Kirkwood & Stamm, 2007).

2.4 Management of Erb's Palsy

The management of children with Erb's Palsy includes the clinical examination of the condition, surgical and rehabilitative management.

2.4.1 Clinical examination of Erb's Palsy

Clinical examination remains the cornerstone in determining the need and urgency for referral.

Ideally, all infants who have palsies should be referred to a clinic specialising in Erb's Palsy (Sutcliffe, 2009). The clinical examination needs to be conducted of the shoulder, elbow, wrist and hand (Singh & Kolamala, 2015). In the clinical examination, general observations are important to determine availability of active movements, position of the affected arm, muscle tone, muscle strength and reflexes of the affected arm (Chauhan, Rose, Gherman, Magann, Holland & Morrison, 2005). Erb's Palsy is diagnosed by a thorough physical examination and medical history. An affected baby may hold its affected arm close to the body with the elbow flexed. In addition to a routine physical examination, some perform special imaging and diagnostic studies such as a nerve conduction study or magnetic resonance imaging (MRI), (Nelson, Justice, Rasmussen & Popadich, 2012).

In Erb's Palsy, there may be little spontaneous movement of the injured arm or hand (Sandeep, Sebastian & Kevin, 2011). An absence of spontaneous movements of the injured arm is an indicator that there is a possible problem. According to Bonham & Greaves (2011), most patients with a brachial plexus injury will present with complete paralysis, or lack of muscle control of the arm, hand or wrist. These authors further state that the assessor should note the position of the limb, any joint abnormalities such as subluxation of the shoulder, skin surface trauma and any vascular signs that may indicate the involvement of the axillary artery. Development of a noticeable result of denervation is common in Erb's Palsy (Smania, Berto, La Marchina, Melotti,

Midiri, Roncari & Gandolfi, 2012). Knowledge of applied anatomy is vital for a good neurological examination in brachial plexus injury, particularly in situations where the imaging facilities are poor. There is need to emphasis applied anatomy clinical skills, the three main types of avulsions of brachial plexus roots and clinically based diagnosis (Gashegu, Nyundo, Ntirenganya, Perez & Kakande, 2008). The physical examination may demonstrate an infant who has a frail arm, inequality in upper arm movements like the biceps and diminished reflexes on the affected side. There may also be a lack of strength in the infant's grip on the affected side. Erb's Palsy results in restriction of movement of the upper arm and the rotation of the lower arm (Iffy, Varadi & Papp, 2015).

2.4.2 Surgical and Conservative Management of Erb's Palsy

2.4.2.1 Surgical management

Surgical procedures for infants who have Erb's Palsy include meticulous exploration of the brachial plexus to determine the location and extent of injury and reconstruction of the plexus (McNeely & Drake, 2003). Surgical interventions are usually performed within the five to six months in patients with absence of wrist extension, coupled with absence of biceps contraction at three months of age (Grossman, 2009). Nerve transfer procedures are increasingly performed to repair severe brachial plexus injuries (BPI). The procedure essentially, involves the incorporation of a proximal foreign nerve to the distal enervated nerve to innervate the latter by the donated axons (Philandrianos et al., 2013). Avulsion injuries are mainly treated with nerve transfers.

Ruptures have varying degrees of recovery, and their treatment remain controversial, concerning indications and timing of surgery (Dhiren & Maulin, 2015). In addition, the intervention requires many resources in terms of economic investments and time, by both a multi-disciplinary team and the patient's caregiver, (Philandrianos et al., 2013). However, tendon transfers are generally

performed when the child is old enough to follow instructions. After surgery, the child will have to wear a cast for about six weeks and a splint at night for up to six months (Ganjwala, & Shah 2015). Bonham and Greaves (2011) state that the earliest reports of a nerve transfer were performed in the early 1900s to treat root avulsion and other difficult nerve injuries. The concept of nerve transfer is not new, but the technique is evolving and has gained acceptance over the years (Smania et al., 2012). There is a time and place for each option on the reconstructive ladder when appropriately selected, nerve transfers have been reliably shown to restore function in cases previously deemed difficult or impossible (Wong, Pianta & Mastella, 2012) Physiotherapy may continue for up to one year after surgery (Hogendoorn et al 2010). In a severe case, the cortical plasticity plays an important physiological role in the functional recovery of the re-innervated muscle (Midha, 2004) and procedures to repair the brachial plexus. The surgical interventions in Erb's Palsy are the only effective treatment for those difficult cases (Jellicoe & Parsons, 2008).

2.4.2.2. Conservative management

Physiotherapy is part of conservative treatment aimed at the different functional problems impairments, activity limitations. A number of physiotherapy interventions are used in the management of children with Erb's Palsy which aimed at avoiding contractures and stimulating the use of the hand while playing and during everyday activities (Smania et al., 2012). Managing children with Erb's Palsy focuses on preventing contractures, increasing the child's awareness of the affected arm and improving muscle strength (Taniguchi et al., 2009). The following techniques include some of the physiotherapeutic techniques used in the management of children with Erb's Palsy which includes splinting, exercise, neuro-developmental therapy, music and constraint induced movement therapy.

Splinting can be used to position the affected limb correctly and to maximise functional usage of the involved upper limb in the child's activities of daily living (Fawcett, 2013). Splints also help to prevent contractures. Literature agrees that the type of splint depends on the child's condition. Resting, air and elbow splints are all different types of splints which can help in preventing upper limb contractures, but is dependent on what is needed (Ohman, Nilsson & Beckung, 2010).

The exercises used in the management of Erb's Palsy include stretching active, active-assisted, and passive range of motion exercises. It is important to prevent contractures using stretching exercises as 60% of the children with upper or upper-middle plexus injury recovered good to excellent shoulder and hand function according to a study conducted by DiTaranto, Campagna, Price & Grossman., (2004). According to (Smania et al., 2012), stretching increases the production of more actin and myosin filaments and the addition of new sarcomeres. Active movements are done that promote passive range of movement. Exercises gradually change to gravity-assisted exercises. As muscle strength/functions of muscle begin to develop, resistance and the use of isokinetic machines are introduced (Abbott, Abbott & Alzate, 2004).

Neurodevelopmental therapy has also been used to promote activity and function of affected children, and participation restrictions in all of these children. The most critical functioning muscles are able to recover after six months of this intervention. Sharp (2012) states that exercises

for Erb's Palsy include stretching, active movements, strengthening exercises, neurodevelopmental therapy, positioning and constraint-induced movement therapy. However, he emphasised that there is a need for more evidence to show that the exercise interventions are effective in the management of Erb's Palsy.

In an A-B-A withdrawal single-subject design, when music was played during therapy, the amount of crying decreased; parent satisfaction increased and this increased the child's rate of progress. Playing music during the session may help stimulate movement in a 'passive' child, interest from a patient resisting therapy, or may comfort a crying baby. Functional performance scores increased in the music intervention period, while the average rate of change in motor organisation scores decreased, as stated by Rahlin, Cech, Rheault & Stoecker (2007). The use of music to gain the attention of the child during therapy session will certainly assist the therapist delivering the right techniques with zero to minimal restriction (Rahlin et al., 2007).

According to Vaz , Mancini, do Amaral, de Brito Brandão, de França Drummond` & da Fonseca (2010) and Taub, Uswatte & Pidikiti (1999), constraint-induced movement therapy (CIMT) consists of restraining the non-affected extremity and intensive task-related training of the affected extremity and consequently promoting the use of the affected extremity for approximately 90% of waking hours, for two to three weeks, with intensive and repetitive training of arm and hand function every day for six hours. Vaz et al. (2010) discussed the development of constraint-induced movement therapy (CIMT). They state that CIMT was based on studies with monkeys that exhibited a behavior called learned non-use after differentiation of one upper limb. Abdel-Kafy, Kamal & Elshemy (2013) used a modified version of CIMT.

The sling was worn continuously throughout the training period except when a break was requested, which did not exceed fifteen minutes every two-hour session. The sling was fastened to the trunk to prevent bi-manual use or cheating that might occur if the sling were free. The modification was that the sling was worn only during the treatment session but not throughout the rest of the day. Using MCIMT, Abdel-Kafy et al. (2013) found a significant improvement in measuring variables of the two groups when comparing their pre- and post-treatment mean

values. They concluded that modified constraint movement therapy is an effective method to improve the arm function in children with obstetric brachial plexus injuries. Vaz et al. (2010) concluded that treatment based on CIMT principles has potential to promote functional gains for children with Obstetric Brachial Plexus (OBP). This study included only one participant. The true nature of the effectiveness requires a larger sample size and a comparative group. According to Vaz et al. (2010), CIMT may not be adequate for all children, as some might not tolerate the frustration of having movement of the non-affected arm restricted. As such, interventions must be delicately attuned to the level of performance presented by each child in order to evade unwarranted irritation (Vaz et al., 2010). Motivation should be maintained and persisted with throughout, keeping the child's interest by using a funny playing environment, focusing of the therapist and parent to create an enjoyable situation that would involve sufficient challenge, and numerous opportunities for repetition (Abdel-Kafy et al., 2013). Abdel-Kafy et al. (2013) found that the efficacy of constrained induced therapy intervention approaches for the paediatric population depends on age at the time of treatment. Overall, the studies included in this review suggest that physiotherapy and children receiving CIMT improve in upper extremity function post-treatment. Parents may lack the necessary resources to conduct home-based treatment using CIMT (Vaz et al., 2010). Therefore, CIMT interventions conducted in a clinical environment might be more appropriate to some families (Vaz et al., 2010). In addition, constraint of the arm may cause the child to be irritable. Therefore, CIMT interventions conducted in a clinical environment might be more appropriate to some families (Vaz et al., 2010). Alternatively, the environment should be fun and other measures should be explored that can facilitate the participation of children in CIMT and MCIMT.

2.5 Experiences of mothers caring for a child with Erb's Palsy

Experience of mothers caring for a child with Erb's Palsy includes limitation in the knowledge of the caregivers about the condition. Poor knowledge and inability to differentiate between a nerve injury and bone related injury are common among mothers. Mothers also lack language in the local ethnic dialect to easily define such type of injury. This lack of language leads to a level of frustration in the mothers as a result of poor knowledge, this supports the need to enrich mothers with basic health care knowledge in orders to better the care they offer to their children. Similarly, if this expression signifies lack of an existing vocabulary in mothers' local dialect, this poses a key challenge in mothers' effort towards seeking medical attention for their children, as language mismatch has been identified as a source of barrier to access relevant information regarding health care (Zielstorff, 2003). Language disconnect also prevents full participations in shared health records and could interfere in communication between patient and health care providers (Zielstorff, 2003). It is therefore, imperative to educate mothers on key medical terms to assist them in presenting their medical conditions in suitable terms to aid both diagnosis and care.

Mothers of children with Erb's Palsy usually encounter different challenges as the primary caregivers of their children. They often feel overwhelmed caring for the child and find themselves isolated (King, Teplicky, King & Rosenbaum, 2004). It was also highlighted that women are often more vulnerable because they are often the only caregivers of the child. In addition, mothers of children with disabilities may give up other important roles such as being a friend and having a social life (Leiter, 2004). The evidence clearly shows that primary caregivers sacrifice a lot to take care of the affected children (Brehaut et al., 2004). These all add to the

mothers experiencing depression. As a consequence, this depression is more likely affected by the extent of the recovery.

When children display positive recovery, there is a decrease in depression in the mothers. Other studies show that in general, caring for children with disabilities has negative implications on the caregivers, presenting emotional problems, depression and distress. Considering the stresses and challenges to the mothers, as noted by King et al., (2004), integrating a Family-Centered Service (FCS) is both a philosophy and an approach that is considered to be the best practice in early intervention and pediatric rehabilitation (King et al., 2004). Carl Roger, pioneer for the family centred practice did extensive work and studies with families of children with special needs. Further studies on FCS have been done in family support and early intervention, and the results applied in the fields of pediatric rehabilitation. There is evidence of greater parental satisfaction with services, better parental psychosocial well-being, and better psychological adjustment of children with the FCS. Despite insufficient literature on the satisfaction levels, it has been observed that parents tend to show overall appeasement with services, and that the greatest need is that of being well-informed (Brenhaut et al., 2004).

Overall, mothers play a major role in the rehabilitation programme; mothers could help health professionals by supporting the provision and development of services for their children (Rahi, Manaras, Toumainen. & Lewando-Hundt, 2005). They are required to be involved in the planning, execution and evaluation processes (WHO, 2004). It is therefore, crucial that they are well informed on matters concerning Erb's Palsy, including rehabilitation. It is vital that the mothers are provided the caregiver information in the language they understand and in a manner that considers their literacy level.

2.6 Summary of the chapter

The literature suggests that Brachial plexus injuries due to neck stretching during delivery are a common cause of Erb's Palsy. Different risk factors pre- and during delivery, such as weight increase, largely increase the incidence of Erb's Palsy worldwide. There are several conservative approaches used in the management of Erb's palsy including exercise, splinting, music, and CIMT.

However, no study has suggested one approach to be better than the other in the management of Erb's Palsy. There is limitation in the mothers' knowledge of the condition of their children with Erb's Palsy. Positive outcomes have been documented when mothers are involved in their children management



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CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methodology used in this study. A description of the research setting is followed by a description of the quantitative methods used to describe the profile of children with Erb's Palsy, as well as the qualitative methods used to explore the experiences of mothers caring for children with Erb's Palsy. These two methods will be presented in two separate sections (A and B) with regards to the research design, and sampling methods, methods of data collection, instrumentation, reliability and validity or trustworthiness and data analysis. The chapter ends with the ethical considerations applied in the study.

3.2 Research setting

The study was carried out at Groote Schuur Hospital in the Western Cape, South Africa. Groote Schuur Hospital is a tertiary level hospital providing healthcare in all the major branches of medicine. It has a capacity of 409 beds serving about 43,031 people, employing over 525 doctors, 1412 nurses and 268 allied health professionals (GSH, 2009). Although Red Cross Hospital is the tertiary hospital in the Western Cape where pediatric patients are mainly managed, Erb's Palsy cases are transferred to a specialised hand clinic at Groote Schuur Hospital. The patients referred to the hand clinic are from a variety of tertiary, secondary and primary healthcare centers. Groote Schuur Hospital provide services to people who reside mainly in the Western Cape.

3.3 Study 1: Description of a profile of children with Erb's Palsy

3.3.1 Research approach and design

A quantitative approach was used to collect the data for this part of the study. The quantitative approach provides a numeric description of trends, attitudes or opinions of a population by usually studying a sample of that population (Twycross & Shields, 2004). The quantitative part of the study provided a description of the profile of the children with Erb's Palsy attending the research setting. The quantitative part used a retrospective descriptive study design. A retrospective study typically utilises previously collected data from administrative databases and medical records. The retrospective studies are relatively inexpensive and faster to conduct than other studies (Fazeli, Ghorbanli & Niknam, 2007). A disadvantage of this method is the fact that it cannot clarify anything about the effect of interventions or the condition after discharge, to be informed of any further recovery estimate or any complications that develop later. Although a prospective study could have addressed this challenge, which often occurs with retrospective records reviews, it would have taken too long to obtain a large enough quantitative sample as the hospital only treats about twelve cases per year.

3.3.2 Study population and sampling

The population in this study included all folders of the children with Erb's Palsy who were referred to the Hands Clinic at GSH. Data was collected from children referred between 1 January 2008 to 31 January 2015. Records were reviewed from 2008 as they were the oldest records available. All cases referred to the clinic during this period were considered for inclusion into the study. A total of 96 children were referred and they were all included in the study. A census survey technique was therefore applied used to collect the data. When using Census sampling the entire population is taken into account (Ross & Reeve 2003). This type of survey

was applied as only ninety-six cases of children with Erb's Palsy were referred to the hands clinic at GSH during the study period.

3.3.3 Data collection instrument

A data extraction sheet (Appendix A) was used in this study. The data capture sheet was developed and designed according to the study objectives as well as questionnaires used in similar previous studies (Santamato, Panza, Ranieri & Fiore, 2011; Vaz et al, 2010; Rahlin et al., 2007). The data extraction sheet was used to record all retrieved data. The data extraction sheet was designed to capture information to address Objective 1. The child's information included socio-demographic data, age at which Erb's Palsy diagnosis was made, age of gestation, and type of delivery and weight of the child. Caregiver information included family income level, number of children, area of residence and maternal adverse events. Clinical information about Erb's Palsy were collected such as side affected, severity of impairment (No hand movement, paresis of upper limb, insufficient information to classify), date of commencement of treatment, surgery was performed (Yes/No), and nerve injury type. The data extraction sheet also captured information about physiotherapy treatment. This included duration of physiotherapy, frequency and the content of physiotherapy.

3.3.4 Reliability and validity

To ensure face and content validity of the data capture sheet, the instrument was sent to the supervisor who was knowledgeable in the area of neurology. To determine reliability, the test-retest method was used. The researcher captured data from ten medical and physiotherapy folders, using the developed data capture sheet. Data was captured from the same folders one week later by the researcher. The data collected was compared to determine reliability and there

were no significant differences. This process was also used as a pilot study to determine how long it took to complete the data capture sheet and determine if the data needed was available in the folders.

3.3.5 Data collection procedure

The data collection process was initiated after obtaining ethical clearance and permission from the relevant parties. An appointment was made with the hospital manager in order to determine the process needed to access the folders of the children admitted with Erb's Palsy. The researcher was referred by the hospital manager to the chief physiotherapist who provided access to the Hands Clinic. An appointment was made with the Head of the Hands Clinic who provided permission to view the records of children managed at the clinic. The medical records of the children are shared between both the Physiotherapy Department and the Hand Clinic in the Orthopaedic Department. Once permission was obtained the researcher perused the folders kept at the clinic and with a documented diagnosis of Erb's Palsy. The data was collected by the researcher from the patient's files within a period of thirty days. To complete data collection the researcher captured the data from the folders in the Hand's Clinic. The data of the ninety-six folders was retrieved and captured on the data capture sheet described above.

3.3.6 Data analysis

The data collected was captured on a Microsoft Excel spreadsheet in preparation for analysis. The data was subsequently exported into the Statistical Package for the Social Sciences (SPSS) version 22.0. Data was analysed using both descriptive and inferential statistics. Descriptive statistics of percentage/frequency of the socio-demographic features and the mean and standard deviation of the age and weight of the patients were all determined. Pearson's product moment correlation coefficient was used to determine the relationship between severity of Erb's Palsy

and demographic characteristics of the patients. An association between severity of Erb's Palsy and type of delivery was analysed using Chi square test. All statistical tests were performed at 0.05 alpha level.

3.4 Study 2: Exploration of the experiences of mothers' caring for children with Erb's Palsy

3.4.1 Study design

A qualitative approach was used to explore the experiences of the mothers caring for children with Erb's Palsy. A qualitative inquiry employs different philosophical assumptions, strategies of inquiry, methods of data collection, analysis and interpretation of the data to quantitative approaches. (Creswell & Clark 2007) suggests that the nature of the research question and the topic that needs to be explored determines what approach could be chosen. Within the qualitative approach a descriptive exploratory design was applied. Descriptive research is conducted about a research problem when there are few or no earlier studies to refer to. The focus is on gaining insights and familiarity for later investigation or undertaken when problems are in a preliminary stage of investigation .and seeks to provide an accurate description of observations of a phenomena and the exploratory research is to identify key issues and key variables (Zikmund, 1991) was used to explore the caregivers' experiences of caring for a child with Erb's Palsy.

3.4.2 Sampling method: qualitative component

A convenience sampling technique was used to recruit the participants for the qualitative part of the study. Convenience sampling involves including a sample of the population that is easily accessible to the researcher (Etikan, Musa & Alkassim, 2016). This technique was used in this study to select participants for the semi-structured interviews. Caregivers were recruited to be a part of the study when they had brought their children for follow-up to the Hand's Clinic. The

staff at the Hand's Clinic, made appointments for children with Erb's Palsy every Wednesday. The researcher visited the clinic every Wednesday between 15 January 2015 to 15 March 2015, to recruit the participants. On average one person was interviewed per week, and some weeks no interviews were conducted as no participants could be recruited.

3.4.3 Data collection procedure

The caregivers who were conveniently selected to take part in the study were approached at the Hands Clinic on the same day after they had been attended to by the physiotherapists. The aim of the study was explained to them and they were invited to take part in the study. After their willingness to join the study, the mothers were requested to either be interviewed on the same day or at a follow-up appointment date. The majority of the interviews were conducted in English (7) as most of the participants stated that they could speak and understand English. One interview was conducted in Afrikaans and a person who was fluent in English and Afrikaans conducted this interview with the assistance of the researcher. The individual who assisted with the Afrikaans interview translated it into English. The interviews were conducted in a private room provided for this purpose. Permission was sought from the participants to audio-tape the interviews. In addition to audio-recording the interviews the researcher made field notes as well. Participant recruitment for the study ended when saturation occurred which was determined using the field notes. Eight parents were interviewed in this study. An interview guide (Appendix B), facilitated data collection.

3.4.4 Trustworthiness

As proposed by Lincoln & Guba (1985), cited in Shenton (2004), trustworthiness of a qualitative research could be ensured through the consideration of four criteria, namely: credibility, confirmability, transferability and dependability (Graneheim & Lundman, 2004).

To ensure confirmability, the researcher kept a record of all baseline data safely for further analysis, and provided enough substantiation that the findings and their interpretation were grounded in the data. Transferability (in preference to external validity/generalisability) is about how much the data can be generalised to the community. In this study, sufficient description of the content of the participants' views and perceptions was made in order to allow future readers to make an informed decision regarding transferability.

3.4.5 Qualitative analysis

The data was transcribed verbatim by a trained independent research assistant. Thematic analysis was applied to analyse the data which was analysed by the researcher and the research assistant. The analysis of the qualitative data began by identifying the meaning in the information gathered in relation to the purpose of the study (Rubin, 2004). Then, the content of the transcribed notes was read and the audio tapes listened to several times to familiarise the researcher with the content and to understand the data, following advice by Marshall & Rossman (1999). The next step involved coding, looking for commonalities, categorising, and identifying themes that emerged from the recorded data. The transcriptions were read and compared several times to verify accuracy, in line with Neumann (2006). The analysis was carried out by the researcher and another person to identify and recognise recurrent ideas and patterns of responses, consistencies and divergences across participants, in accordance with Jones (1985). After the analysis was conducted separately the researcher and the independent research assistant gathered together to check the themes that were identified. Peer review of the data analysis process was also done by the thesis supervisor.

3.5 Ethics

Ethical approval (Appendix I) was sought from the University of the Western Cape Senate Higher Degree (Ethics number 14/2/4), the University of Cape Town Senate Higher Degree and further permission was sought from the management of Groote Schuur Hospital. The aim and objectives of the study were explained to the caregivers (Appendix, C, G). Written informed consent (Appendix D, F, H) was sought from all the caregivers. Participation was voluntary and caregivers were given the opportunity to withdraw from the study at any time. Information obtained from the caregivers was for study purposes only and was handled with confidentiality. Information obtained for the quantitative part was kept confidential as no names were used during analysis of this data. Pseudonyms were used to protect caregivers' identities when results were published; tapes used were destroyed after they had been transcribed and information documented according to themes. There were no known risks in this study; however, caregivers were referred appropriately should the need arise. The information obtained would be shared by the relevant stakeholders.

3.6 Summary of the Chapter

The study had two parts, with one quantitative and two qualitative parts. The chapter discussed the methodology used by describing the study design, research setting, sampling methods and the procedure for data collection and analysis for each of the two studies. The chapter also discussed methods used to ensure validity and trustworthiness as well as the ethical procedures followed before and during the study were also explained. Chapter Four engages with the results of the quantitative study.

CHAPTER FOUR

RESULTS OF THE QUANTITATIVE STUDY

4.1 Introduction

This chapter presents the results of the quantitative part of the study. It includes several sections related to participant's recruitment, the demographic information about the demographic statuses of the participants, level of impaired neurological nerves damage and physiotherapy management received respectively.

4.2 Recruitment of participants of the Quantitative Phase

The information related to the participants was gathered through a review of files of patients with Erb's Palsy in the period between 2008 and 2015. Ninety-six files were selected and were all reviewed for data collection, suggesting an average of thirteen new cases per year.

4.3 Socio-demographic information

4.3.1 Demographic information of the participants (children with Erb's Palsy)

This section presents the demographic data of the participants in the study, which include their gender, age and weight. In addition, it includes information relating to the children with Erb's Palsy and caregivers of the children. as shown in Table 4.1 and 4.2 respectively.

Approximately, 43.8% of the files were of males (42) and 56.3% were (54) females. The average age of the patients was 3.8 months old with (SD = 0.63). The mean age for males was 2.3 months with (SD= 0.24), as mean age females was 3.5 months with (SD=0.38), there were as no statistical differences between the ages of male versus female participants ($t_{94} = 1.69, p = 0.112$). The mean weight of the participants was 3.9kg and (SD= 0.63kg). The mean weight for

the males was 3.8kg with (SD= 0.64kg) and the mean weight for females, was 3.8kg with (SD=0.61kg), and indicated no statistical differences between the weight of males versus females ($t_{90} = 1.17, p = 0.245$).

Table 4.1 Demographic information of the participants (children with Erb’s Palsy)

Variables	Frequency (n)	Percent (%)	Mean Age Weight	Standard Deviation of age (SD).
Gender				
Female	54	56.3	3.5	0.3
Male	42	43.8	2.3	0.24
Weight				
Female	51	53.1	3.8	0.61
Male	41	43.1	3.8	0.64
Missing	4	3.8	0	0

4.3.2 Socio-demographic data of mothers of children with Erb’s Palsy

This section illustrates information related to mothers of children included in this study. Information such as number of children, employment status of caregiver, and type of delivery was obtained from the patient files, as shown in Table 4.2.

Table 4.2: Information related to the mothers(n=96)

Variables	Frequency (n)	Percentage (%)
Number of delivery		
Second born	42	43.8
Third born	20	20.8
First born	19	19.8
Fourth born	11	11.5
Missing	3	3.1
Fifth born	1	1
Income level of family		
H1	71	74
H2	12	12.5
H0	5	5.2
H3	4	4.2
Missing	4	4.2
Type of delivery:		
Breech	60	62.5
Vacuum extraction	22	22.9
Forceps	7	7.3
Caesarean	4	4.2
Missing	3	3.1

Key= H0 = Social Insurance or unemployed = fully subsidised, H1= Less than R36 000 per annum, H2= Less than R50 000 per annum, H3= As gazetted (Private self-funded)

In the hospital files, information regarding family income 90.7% (87/96) were documented as having some income (H1, H2, H3); while only 5.2% were documented as being fully subsidised

either as a result of received a grant or being unemployed (H0). Most of the cases were the second delivery 43.8% (42/96); 20.8% were third delivery (20/96); and 19.8%(19/96). were at the first delivery Ninety-two per cent of delivery (89/96) were vaginal type of delivery; only 4.2% were caesarean (4/96); and 3.1% (3/96) was missing.

4.4 Level of impaired neurological impairment

This section presents the results of the level of neurological impairment, information regarding the side affected, the level of neurological impairment, and type of the nerve injury (neurapraxia injuries, neuroma, avulsion injuries and rupture) were also presented.

The result indicated that in 52% of children, the right upper limb was impaired while 48 % the left upper limb was impaired. In terms of level of neurological impairment, 54.2% (52/96) can't use the hand, 24% (23/96) of the arm were reported to be weak while 21.9% cannot be classified due to incomplete information (Table 4.3).

Table 4.3: Level of neurological impairment

Impairment(s)	Frequency(f)	Percentage (%)
No hand movement	52	54.2
Paresis of upper limb	23	24.0
Insufficient information	21	21.9

Among the cases presented, 29.2% (28/96) were secondary to neuroma (Erb's Palsy); 5.2% (5/96) were neurapraxia injuries; 2.1% (2/96) were avulsion injuries; 25% (24/96) had rupture in the nerve; 38.5% (37/96) constituted missing information.

4.4.1 Relationship between demographic characteristics and severity of Erb's Palsy

Table 4.4 presents the severity of Erb's Palsy, and was determined using variables normal, weak and cannot use hand, the relationship between certain demographic variables as well as the relationship of these variables with severity of Erb's Palsy

Table 4.4 Relationship between demographic characteristics and type of delivery, weight of the child and severity of Erb's Palsy

Variables	R	Prob.
Age vs Type of delivery	0.236*	0.021
Age vs weight of child	-0.156	0.129
Age vs severity	0.134	0.194
Age vs gender	0.194	0.058
Type of delivery vs weight of child	-0.047	0.647
Type of delivery vs severity	0.337**	0.001
Type of delivery vs gender	-0.018	0.862
Weight of child vs severity	0.169	0.100
Weight of child vs gender	-0.141	0.171
Level of severity vs gender	-0.080	.439

To determine the relationship between demographic characteristics of patients with Erb's Palsy and severity of the condition Pearson's coefficient of correlation was conducted, findings only

showed a significantly positive relationship ($r_{95} = 0.337, p = 0.001$) between the type of delivery and severity of Erb's Palsy. To determine which type of delivery is largely associated with the severity of Erb's Palsy Chi-square test was conducted (table 4.4), the result indicated a significant association ($\chi^2_{6}=13.30, p=0.039$), with vacuum delivery presenting larger percentage of children who cannot use their hands (81%).

Table 4.5: Association between type of delivery and severity of Erb's Palsy

Variables	Level of severity			Total n (%)
	Normal n (%)	Weak n (%)	Can't use hand n (%)	
Breech	18 (29.5)	17 (27.9)	26 (42.6)	61 (100.0)
Forceps	1 (14.3)	1(14.3)	5 (71.4)	7 (100.0)
Vacuum extraction	0(0.0)	4(19.0)	17(81.0)	21 (100.0)
Caesarean	1(25.0)	0(0.0)	3(75.0)	4 (100.0)
Total	20(21.5)	22(23.7)	51(54.8)	93 (100.0)

4.5 Management

This section presents the different forms of treatment available for the patients in the setting as shown in Table 4.6.

4.5.1 Surgical management

The records showed that only 29% (28/96) of the participants had undergone surgery, 69.8 % (67/96) did not have any form of surgical intervention and in 2.1% information was missing (2/96). There was no other detailed information regarding surgery provided in the case files.

4.5.2 Conservative management

This section presents the percentages of individuals who received physiotherapy as well as the type of physiotherapeutic interventions received.

4.5.2.1 Physiotherapy interventions received

Figure 4 shows that 53.1% (51/96) of the children attended physiotherapy for treatment, 43.8% (42/96) did not receive physiotherapy treatment and information for 3.1% (3/96) was missing as shown in Figure 4.1. The mean number of physiotherapy treatment sessions received was 4.1 (SD= 1.7) sessions.

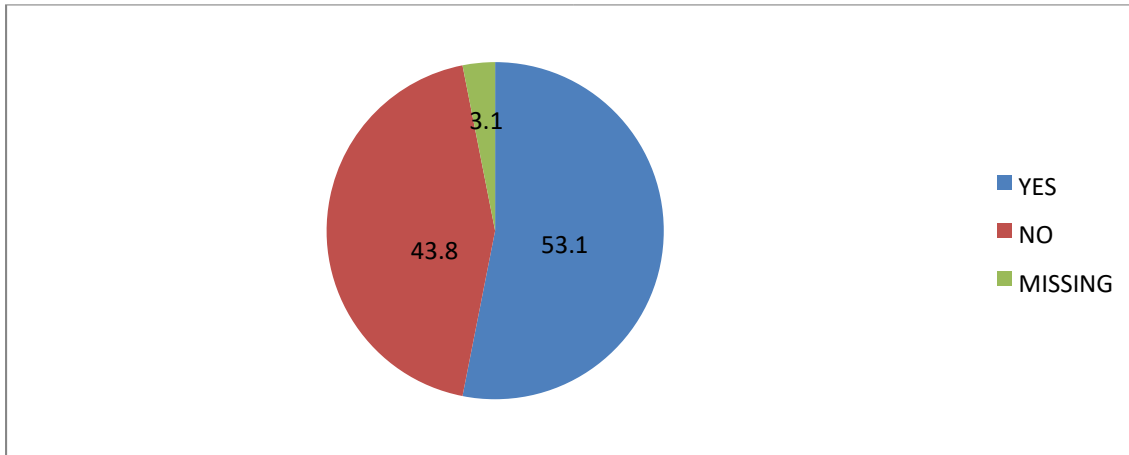
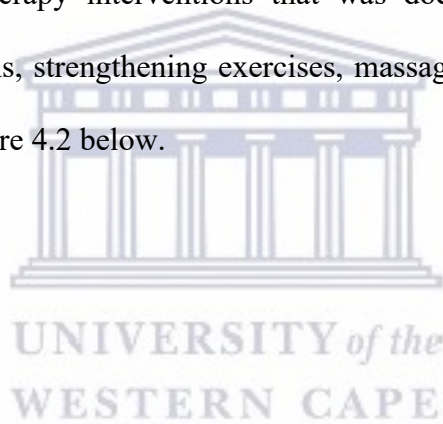


Figure 4.1: Physiotherapy received

From the study, the physiotherapy interventions that was documented to be received are: education about their conditions, strengthening exercises, massage and stretching exercises and this was highlighted in the Figure 4.2 below.



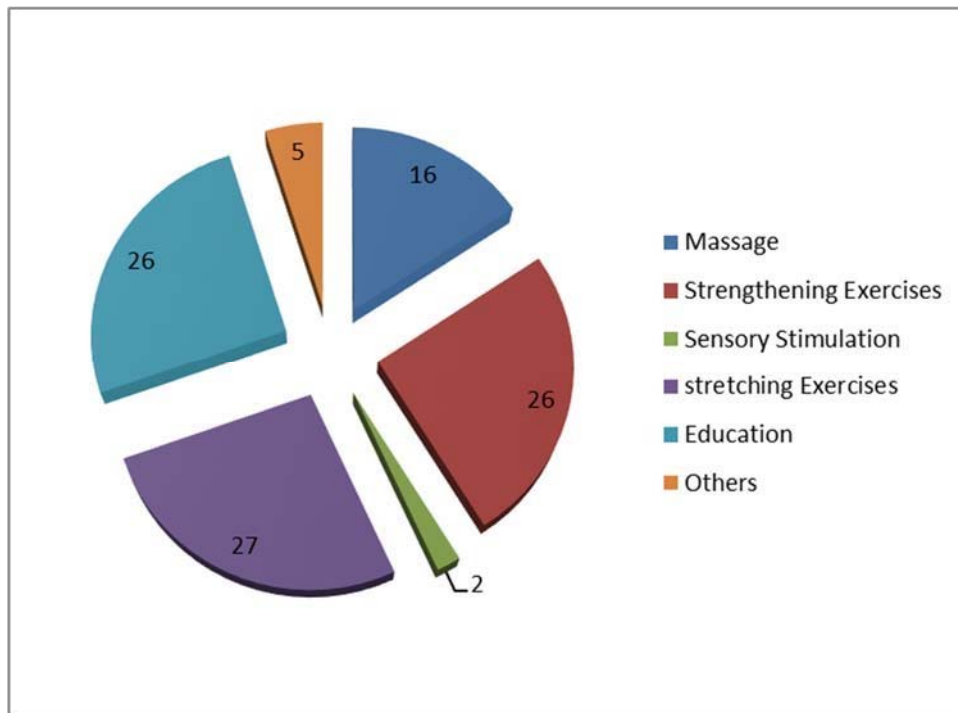


Figure 4.2 The physiotherapy interventions received (n=42 participants received physiotherapy)

4.6 Summary

This chapter presented the results of the record review on Erb's Palsy. It provided information's on socio-demographic data of the participants included in the study. Information on the general profile of these patients were described and presented in tables and figures. The current physiotherapy interventions were also described. A total of ninety-six files of patients with Erb's Palsy treated at Groote Schuur Hospital between 1 January 2008 and 31 December 2015. The final study sample however, the results revealed that the mean age of the sample was 3.5, who were mainly female. The relationship between demographic characteristics and severity of Erb's Palsy showed a significantly positive relationship ($r_{95} = 0.337, p = 0.001$) between the type of delivery and severity of Erb's Palsy. The result indicated that in 52% of children the right upper limb was impaired, while in 48 % the left upper limb was impaired. The records showed that

only 29% of the participants had undergone surgery, 53.1% (51) of the children attended physiotherapy for treatment, the following findings will be discussed in Chapter Five.



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CHAPTER FIVE

DISCUSSION OF QUANTITATIVE RESULTS

5.1 Introduction

This chapter discussed the findings of the quantitative section of the current study with reference to relevant literature. The findings were discussed under the following main sections: demographic profile, level of impaired neurological nerves damage and management. The results were compared with information provided.

5.2 Demographic profile of the participants

This section includes discussion regarding the participant's socio-demographic information such as number of participants included in this study, age, weight and gender. In addition, it includes a discussion related to the mothers or caregivers such as income level of the family and delivery type. However, marital status of mothers was not ascertained, as most data were obtained from children's file where little information about mothers was made available.

Ninety-six files were reviewed from 1 January 2008 to 31 January 2015 in this study, suggesting an average of thirteen new cases per year. This was much higher than what was recorded compared to the study done by Ugboma & Omojunikanbi (2010) in Nigeria, which found that the number of cases for Erb's Palsy in a public hospital in the period between 2003 and 2008 was seven cases in one year. Although this study reported a higher number of occurrences of infants with Erb's Palsy the researcher cannot conclude a higher incidence for South Africa when compared with Nigeria as incidence would be related to overall number of births which was not a consideration for this study. The occurrence of Erb's Palsy can be as a result of a number of factors, which includes, skill of the birth attendants (Ugboma & Omojunikanbi, 2010)

as well as, mother's lifestyles. Lifestyle and gestational diabetes, results of overweight and obese women most affect the risk of Erb's Palsy and increased occurrence of birth weight. Some deliveries are done by poorly trained birth attendants. Some of these deliveries are done by traditional birth attendants in homes. There were a large number (62.5%) of breech deliveries documented in the folders reviewed in this study, however limited evidence is available on the relationship between breech delivery and Erb's Palsy.

Although statistically non-significant, there was a greater number of female patients in this study (56.3%) while (43.8%) were males. This could be linked to the fact that more female patients were born when compared to males. Children in this study were admitted at 3.8 months, an age where positive outcomes can still be expected in management of Erb's Palsy. Al-Qattan & Al-Kharfy (2014) stated that children who present at an early age for medical management for Erb's Palsy are more likely to have a better outcome. Literature supports the use of early surgical and conservative treatment. According to Al-Qattan (2000), statistics indicate that the surgical intervention must be done early to optimise the potential for a good surgical result, as well as prediction of prognosis and early surgical decision-making.

The average weight of the patients in this study (3.9kg) was similar to that found by Ugboma & Omojunikanbi (2010). Some studies consider babies at higher risk of birth complications if they are 3.9kg or higher (Ugboma & Omojunikanbi, 2010). Babies with a greater weight upon delivery are more likely to be at risk of experiencing a difficult delivery (Houston, 2000). In this study there was a positive correlation between type of delivery and severity of Erb's Palsy, specifically breech delivery being significantly associated with severity of Erb's Palsy.

5.3 Side and severity of impairment

In this section, information regarding the side affected and the severity of the impairment is discussed. In this study, the right side was documented as (52%) being mostly affected. Immerman et al., (2012) stated that it is still unknown why the right hand is more commonly affected. Therefore, the data on hand dominance is relevant as generally in the society more people are right dominant (Pastou, 2011). This is probably more important in the African context where cultural reasons often suggest the use of the right upper limb over the left upper limb, the children often have a disability which they carry into adulthood. Al-Qattan & Al-Kharfy (2014) stated that patients with residual dysfunction are more likely to use the contralateral hand in their activities. This may promote inactivity and permanent disability in using the affected arm. The result of this study also indicated that 54.2% of the children cannot use the affected hand, resulting in difficulty to manipulate and grasp objects (Shumway Cook & Woollacott 1995). Injury at C5-C6 causes weakness and difficulty in flexion and supination of forearm, which results in posterior subluxation/dislocation of the radial head of the ulna (Ahmed & Hashmi 2006). This may affect the child's ability to perform functional activities such as in playing with other children of his/her age. Therefore, the child is expected to have some delay in crawling, sitting, standing and walking.

5.4 Management

In this study, surgical intervention was performed in 29% of patients, however, the reasons for the surgery and type of surgery are not clearly documented in the case files. Other studies state that many children have undergone surgery when C5-C6 nerve roots are affected (Chang, Wu, Chen, Chan, Chang & Chiang 2015; Lagerkvist, Johansson, Johansson, Bager & Uvebrant 2010). According to Chang et al (2015), the importance of surgery and its benefits are apparent

in infants and young children when the surgery is done within one year of birth. Surgical intervention is also necessitated by the fact that, symptoms of rupture and avulsion injury rarely disappear, on their own and surgical intervention may be crucial to prevent further loss of sensation and movement of the arm. Another finding in this study on the type of nerve injuries presented by the patients, which indicated that the most reported type of nerve injury is neuroma (29.2%) and it is closely followed by avulsion injury (25%). The type of injury presented might also explain why surgeries were conducted, although the link between type of injury and frequency of surgery cannot be established in this study. Neuroma, avulsion, rupture, and neurapraxia have been reported as the four types of nerve injuries that have prolonged duration of healings, with approximately two years for a complete recovery (Zefeiriou & Psychogiou 2008).

Physiotherapy is very important in management of patients with Erb's Palsy at a very early stage (Holly, Hale & Waters, 2010). It will help the child in developing his/her functional activities (Taylor, Dodd, Baker, Willoughby, Thomason & Graham, 2013). Intensity of Physiotherapy matters in relation to speed of recovery, for example, when doing intensive physiotherapy, Erb's Palsy patients were able to crawl with the active help of both arms (Lagerkvist et al., 2010).

Among the forty-two participants who attended physiotherapy treatment, the average number of physiotherapy sessions was four; the duration of the physiotherapy treatment and the exercise done at home is unknown as it was not documented in the patient folder. Education about the condition, and strengthening and stretching exercises were the most common physiotherapy managements obtained. Family education about the condition is important because it educates the parents about their role in attaining a good outcome. It will also give realistic expectations to the child's parents and will improve and control the communication between parents and physiotherapists on the rehabilitation programme. In this study, the researcher found that there

was less use of sensory stimulation as physiotherapy management for the patients. A study done by (Okafor & Opuene 2007) found that, in comparing sensory stimulation and conventional physiotherapy treatment, sensory stimulation gave a better approach in the course of rehabilitation for an early resolution of function in Erb's Palsy. The use of CIMT is an evidence support recommended physiotherapy treatment for children with Erb's Palsy (Okafor, Akinbo & Sokunbi, 2008). CIMT was not listed in any of the interventions listed in the patient files. Additionally, as documented in previous studies (Nath et al., 2010) the documented physiotherapy did not include some of the evidence base interventions such as constraint-induced therapy. It should be further explored why physiotherapists in the current research setting were not including techniques such as CIMT in their management of children with Erb's Palsy.

5.5 Summary of discussion

This chapter discussed findings for quantitative study. The results are discussed in relation to the objectives of the study as well as how they relate to relevant literature reported from other studies. The study had two objectives which were: to describe the profile of children with Erb's Palsy admitted to Groote Schuur Hospital in the Western Cape, the socio-demographic profile (age, gender) of children with Erb's Palsy, the clinical picture of children with Erb's Palsy (site of impairment, level of impairment) and the current medical and physiotherapy management of these children at the study setting.

CHAPTER SIX

QUALITATIVE RESULTS AND DISCUSSION

6.1 Introduction

The qualitative phase of the study used in-depth interviews to explore the mothers' experiences of caring for a child with Erb's Palsy. The experiences expressed by the participants were grouped into three main categories including mother's experiences regarding the diagnosis of their child's condition, as well as personal and environmental factors experienced as a result of caring for their child. In the presentation of the findings, verbatim quotations from interviews was used to illustrate response themes and categories. For purposes of anonymity and confidentiality, the transcribed quotations of data from the interviews was cited in the cryptogram P1 to P8. The presentation of themes and sub-themes was followed immediately by their discussion with reference to relevant literature.

6.2 Participants' demographic information

In-depth interviews were conducted with eight participants. All the participants interviewed were the mothers of the children (Table 6.1). The age and side affected of the child were presented of the children whose mothers were interviewed.

Table 6.1: Description of participants

Participant ID	Age of the child	Side of impairment in the child
P1	4 months	Left
P2	2 years	Left
P3	7 months	Right
P4	4 years	Right
P5	8 months	Left
P6	1 Year	Right
P7	10 months	Right
P8	6 months	Right

6.3 Themes

Three main themes which emerged during the thematic analysis. Verbatim quotes were used to illustrate the three themes which were “*Mothers’ experiences of the diagnosis child’s condition*”, “*Experiences with health care providers*” and “*Personal and environmental factors as a result of caring for a child with Erb’s Palsy*”, as presented in Table 6.2

Table 6.2: Themes and sub-themes

Theme	Sub- theme
Participants' experiences with the condition of the child.	<ul style="list-style-type: none">• Identification of child's condition• Participants' perceptions about the diagnosis of the child's condition.• Participants' perceptions about the cause of the condition.
Experiences With Health Care Providers (HCPs)	<ul style="list-style-type: none">• Experiences of the interaction with HCPs.• Participants' experiences with the physiotherapy interventions provided to their child
Personal and environmental factors experienced.	<ul style="list-style-type: none">• Participants' emotional status• Finances• Support

Sub-themes were generated related to the responses provided by mothers.

6.3.1. Participants' experiences with the condition of the child.

6.3.1.1 Participants' identification of child's condition and perceptions of the diagnosis of the child's condition.

The participants were able to identify that there was a problem with their child's arm. They expressed the problem as the arm being broken. Additionally, they also highlighted that there was nerve involvement and that the child had difficulty in using the arm in functional activities.

The quotations below present the mothers' responses.

"She can't move the arm because the hand is not in the right condition." (P6)

“The right arm is, uh, is broken but it can lift something but not for long time. Because the time I ...[delivered] the baby, they just pulled the baby, so they broke the arm. So that is why that right hand arm is not working...” (P2)

There was also some indication that the lack of movement was related to nerve damage.

“...Her nerve into her neck got hurt. The nerve and the shoulder went apart from each other, that’s why then the nerve was damaged.” (P3)

“...the nerves were broken so it can’t be nice....” (P6)

From the responses it was clear that the mothers were able to identify that there was something wrong with the upper limb of their child. The mothers expressed this in relation the child not being able to conduct functional activities.

“It’s difficult because he can’t play with other children, he can’t eat, he can’t use that side now he’s trying to use his left-hand side. He doesn’t use that arm it’s very weak, even if the other ...children abuse him fight he can’t fight for himself.” (P4)

“...Because if he wants to do something he just take the left arm and help this arm and then he picks it up something.” (P2)

The responses of the mothers suggested that most of them were fully aware that something was particularly wrong with the upper limb of their child. The reporting that the child’s arm was broken could be linked to the lack of knowledge of the mothers about the condition and the inability to differentiate between a nerve injury and an injury related to the bone. It could also be as a result of a lack of a term in the local ethnic dialect to easily define such type of injury, therefore the term that fit such presentation could be *“broken arm”*. It is, therefore important to

appreciate two key issues based on the mothers' responses here, firstly ability to identify existence that something was wrong with the child's upper limb and secondly poor knowledge of the condition. A lack of knowledge of the condition supports the need to enrich mothers with basic health care knowledge in order to improve the management of their children (Yen, Thuy, Araki, Takeuchi, Maeda, Inoue & Yin 2016). It is therefore, imperative to educate mothers on key medical terms to assist them in presenting medical conditions in suitable terms to aid both diagnosis and care. Studies have noted the importance of mother's experiences and care as significant entities to child health (Witt, Kasper & Riley 2003). Witt et al (2003) identified that acquisition of basic health education may provide future mothers with information useful for diagnosing and treating child health problems. This is particularly so in poor resourced countries because most of the responsibilities of child care is vested on mothers in developing societies (Witt et al 2003). While the suggestion above was not specific for Erb's Palsy and this study did not examine mothers' level of education in relation to this condition, mothers' knowledge about child care have consistently been identified as influencing the nature and quality of care that is given to the child (Kamau-Thuita, Omwega & Muita 2002; Saeed & Bani, 2000).

If the lack of ability to identify the diagnosis of the child signifies a lack of an existing vocabulary in mothers' local dialect, this poses a key challenge in mothers' effort towards seeking medical attention for their children, as language mismatch, has been identified as a source of barrier to access relevant information regarding health care (Zielstorff, 2003). Language disconnect also prevents full participation in shared health records and could hinder communication between patient and health care providers (Zielstorff, 2003).

6.3.1.2 Mothers' perceptions about of the cause of the condition

The participants responded about difficulties during birth relating to the size of child, birth process and pre-morbid conditions of the mother such as chronic illness. Some mothers knew it was done to save their lives or the baby's while others thought it was the hospital's fault.

"The time I was deliver the baby they just pulled the baby because he was big, they didn't cut me so they just pull." (P2)

"...Cause of the problem, um, nurses they saying your baby is too big and the time you can give birth is over so they use force to help me and the baby." (P6)

Other responses of mothers on causes of their children's condition included statements such as: babies were stuck during delivery.

"She was stuck, her shoulders were stuck into me and then they pulled her out that is why her arm is like, it's, um, it's an arm disorder." (P3)

Some mothers reported that procedures were done to save their lives or the baby's,

"...So they break the shoulder so that he can come out. When I when so they told me the reason they break the arm is because they wanted my life, the bone of the child can be... can be fixed, mine because of the age can't be fixed. So they were trying to save my life." (P4)

while others thought it was the hospitals fault.

"...So my doctor from my hospital sent me to a certain secondary hospital the people must give me caesar so the people there the doctor there they didn't give me caesar just forced me I must get a baby you see. And then my baby, the time I was getting a baby the baby was stuck don't want to come out, ... and then the arm was broken." (P1)

A mother also indicated that the cause could be due to factors relating to the mother such as a chronic illness of the mother, for example, high blood pressure. and diabetes as contributing to the child's arm problem.

"...because I have a lot of stuff my sugar was too high [during] the delivery." (P1)

"...uh the problem it was high blood pressure that is why they didn't make operation." (P2)

Some mothers also reported that the cause of the arm problem was related to delivery complications.

"...It was very difficult. Because I didn't push, I was tired, I push I push and the child didn't come out only the head that come. So they also used their hand to push him out." (P4)

The mothers' perceived causes of their children's condition included size of the child at time of delivery plus prolonged labour, pulling of arm during delivery, procedures aimed at saving of mother's or child's lives and mother's pre-delivery chronic disease status/health condition (hypertension and diabetes). Ibrahima, Hawamdeh & Alsharif. (2011) reported similar reasons as causes of Erb's Palsy (nerve injury), including high blood pressure among mothers, poorly managed high blood sugar levels from gestational diabetes or diabetes mellitus and the child's weight. However, being a qualitative study more perceived causes of Erb's Palsy were identified in the current study, unlike the reported factors by Ibrahima et al. (2011) in a quantitative study investigating bone mineral density in children with perinatal brachial plexus palsy. While Ibrahima et al. (2011) reported two factors (mother's chronic disease condition and child size), this current explorative qualitative study presents additional factors (prolonged labour, pulling of arm during delivery, procedures aimed at saving of mother's or child's lives, birth attendant's poor skill/fault) perceived to contribute to development of Erb's Palsy. This finding further

confirm the advantage of qualitative study design, which is said to have the ability to generate new ways of seeing existing data (Atieno, 2009). Additionally, it usually develops more salient issues by using broad and open-ended inquiring (Choy, 2014). The implication of this finding, therefore, to widen the scope of an etiologic factors contributing to the incidence of Erb's Palsy beyond mothers related complication and child size and suggest the need to verify these claims by mothers in a planned study in order to develop strategies to manage these other factors.

Findings also indicated mothers were not aware of the exact diagnosis of the condition their children were suffering from, but they showed certain level of idea of the cause of the condition. It is advocated that health education interventions for mothers should focus on the diagnosis of condition more than the cause of the condition (Sandmire & Demott 2008; Gurewitsch, Johnson, Hamzehzadeh & Allen,2006). It is possible that the doctors or nurses are providing information about the cause and not the actual condition. Presumably, it is expected that identification and understanding of the diagnosis of conditions will aid significantly in preventive approach and enhance better caregiving. This has been found in previous studies (Sandmire & Demott 2008; Gurewitsch et al., 2006). Some mothers however specifically reported that their children were not comparable to others.

6.3.2 Experiences with HCP

6.3.2.1 Experiences of the interactions with HCP

When interacting with the healthcare providers, the factors expressed by the participants related to the information provided and the manner in which the healthcare workers engaged with them.

The mothers expressed their satisfaction with the information provided. They indicated that the child's condition was explained to them. In the case where a child received surgery the mother also expressed her satisfaction with the details provided;

“ . . . they gave me the real information at ... hospital . . . like the cause of the problem and how long it will take . . . the best procedure . . . everything they explained...not all the children go for operation, nuh, but in our case because the wrists were so bad so the doctor told us ...she must go for operations so she can heal so after this operation it takes at least 6-9 months for her to heal up to a year it take before she can actually move her arm that's the information the doctor gave me.” (P3)

“ . . . I am satisfied with the doctor because he . . . explains to me about my child's [condition] you see.” (P4)

although mothers indicated receiving sufficient information from the doctors, a mother stated that her exact question about the reason for the child's condition was not answered.

“Ja, but they don't answer my question because I want to I, I always ask the doctor why... I didn't get it full information.” (P1)

The participants also expressed satisfaction with the manner in which the healthcare provider engaged with them. They experienced the healthcare workers as being approachable and providing valuable information.

“When you have problem you can talk to them whatever . . . they are always ready to help you and the doctor also is very nice . . . they give you advice very well and when they see problem in your baby they also tell you, you are doing wrong here . . . they always give you advice.” (P3)

“...I am satisfied with the doctor because he...explains to you about your child's condition” (P5)

The participants' experiences regarding their interaction with service providers were related to their being respected, appreciated and cared for. This resulted from the service providers providing time to relate to and communicate with them. Interaction with health care providers is important as this could affect the rehabilitation of the child with Erb's Palsy. A lack of satisfaction could affect follow-up treatment sessions (Hays & Rozental, 2013; Callery, Milnes, Verduyn & Couriel, 2003; Crisp, 2000). To take control of their child's condition, mothers need knowledge of the condition and including the management of the condition. Important information that is needed includes information about treatment session, accessing services, support networks and strategies that would help them cope with their children's health challenges (Fawcett 2013; Cashin, Small & Solberg, 2008; Balling & McCubbin, 2001). In previous studies mothers of children with Erb's Palsy described difficulties in obtaining information and many were dissatisfied with the information provided by healthcare professionals particularly at the time of initial diagnosis (Smith., Cheater, & Bekker 2015; Fawcett 2013; Swallow & Jacoby, 2001). Barriers to effective information provision included: the overuse of medical jargon (Swallow & Jacoby 2001), insufficient, inaccurate and unclear information (Nuutila & Salanter 2006), information being given quickly with little opportunity for discussion (Nuutila & Salanter 2006) and inappropriate timing of information.

6.4 Physiotherapy Interventions

The mothers reported that the physiotherapy received included demonstrations of exercises that could also be done at home. The mothers also highlighted the importance of exercising the upper limb of their child and expressed the importance of physiotherapy.

“They just told me I must do this and must do exercise him and [showed] me how I can exercise him; they taught me how I can exercise this boy.” (P4)

“They give me demonstrations yes, to do at home.” (P6)

Mothers reported the importance of keeping the arm moving as indicated to them as well as the importance of the physiotherapy treatment.

“Ah, just like they say [I] must exercise and I must keep ...that hand [moving] always.” (P5)

“Yes, they do that physio treatment is enough treatment nothing else can give me more.” (P6)

The participants expressed the importance of physiotherapy treatment. The importance of physiotherapy has previously been documented in the literature (Hays & Rozental, 2013). Physiotherapy is a branch of rehabilitative health that is considered one of the most important aspects of treating children with Erb’s Palsy. The goal of physiotherapy is to maximise functional control of the body, or increase gross motor function. (Effgen & McEwen,2007). All treatment is designed to meet a child’s individual needs in a way that emphasises physical fitness, and minimizes injuries and pain. In addition, home exercises may benefit patients with Erb’s Palsy and their mothers, and may be provided as an adjunct to formal therapy sessions (Hays & Rozental, 2013).

Although the quantitative results indicated that the physiotherapists also provided education and massage this was not highlighted by the mothers, which could either mean that exercises were primarily provided or that the mothers perceived all of physiotherapy as exercises.

6.5 Contextual factors

Contextual factors include personal and environmental factors (WHO 2001). The personal factors that emerged from the study related to the emotional status of the participants and financial challenges experienced, while the environmental factors included support and relationships; attitudes of others and services.

6.5.1 Emotional status of the mother

Mothers were emotional about several aspects of the children, especially relating to the child's functional status. Mothers expressed a lack of ability to cope and even expressed hatred as a result of not being informed by the health care provider about the child's condition after birth.

“It's difficult, not nice seeing child like that child is deprived of the joys of being a kid. can't play, can't sit properly, can't fight back, can't eat with that arm, can't roll on the ground.” (P3)

“It is too much for me. Already I do not know if he is going to be ok. I feel hate that they did not tell me about the child after I gave birth.” (P5)

6.5.2 Financial challenges

The participants expressed a financial challenge which was linked to the difficulty in attending the follow-up treatment session. The need for financial support and the influence of the child's condition on the ability to work and earn a living was also highlighted

“Okay, I can say that like if I came here sometimes even I don’t have money, enough money to come here because it’s very expensive and I’m staying there in far in to come here every time, you see I try.” (P2)

The mother’s responses to difficulties with finances resulted in them requesting financial support.

“I also ask the doctor today because there is nothing else you can do about this even if I make a grant there is nothing else.” (P2)

“Um, I need the support you see like so if I do make a grant for this child maybe they can give me that, uh ... disable grant, not a child grants because they mess my child.” (P3)

The fact that the mothers were thinking about the child’s future, in that they identified that the child might not be able to have proper schooling and therefore be able to work one day.

“I don’t know what must I do because what I need now is that is that this child can’t work so he needs to pay ... that money for disabled child because I don’t know how now. I don’t know how to get that disabled money so that he can pay because he can’t work hard, do you understand? He can’t work hard, he needs to get a proper school so that he can be educated, to get a hard work.” (P4)

6.5.3 Support

Support provided to the participants were either received only from family members, but could have been received from community members as well as is expressed in the quotation below.

“No support, only comes from my family obviously.” (P3)

“Yes also, also my neighbors they also support me.” (P2)

Caring for a child with Erb’s Palsy clearly affected the participants emotionally. This often occurs as a result of the dependency of the child on the mother. It was also a challenge for the

participants that their children were not functioning as other children did. When a child has a disability, participants experience the typical stressors associated with motherhood as well as a host of additional stressors unique to their child's condition. It should be noted that caring for a child with a disability could lead to depression in the carer (Sajedi, Alizad, Malekkosravi, Karimlou, Vameghi, 2010). This emotional challenges experienced by the participants could be further exacerbated by financial challenges. Finances money plays an important role in the upbringing of children. In this study the costs ranged from the doctor's consultation and buying medication to transport this means that care-giving results in an added economic burden. Dambi et al., (2015) state that economic empowerment of caregivers in the form of microcredit programmes may lead to reduced financial burden. The authors also stated that provision of low cost aids could help to alleviate physical and financial burden in caregivers.

Bourke, Snow, Herlihy, Amor & Metcalfe (2014) stated that the mothers required assistance from both formal support services and their personal support. They outlined a range of experiences in both of these domains. Formalised support, specifically Health Service (HS), support and family were seen as essential to successful outcomes regarding mothers' adjustment in some cases.

When asked if the society was supporting them, the mothers described family members and other people to be supportive. Marvin & Pianta (1996) suspect that good quality emotional and social support from partners, family and friends is critical if resolution is to be achieved. Secure attachments are the result of sensitive caregiving, clear communication and good understanding between children and their mothers, then it is important to help those who care for children with disabilities establish these skills. Some mothers reported having had a negative experience with their social supports, highlighting the importance of providing services that meet mothers' needs

for information, partnership, support and understanding of the condition. The lack of social support is highlighted by the following quotations, “*ha ah nobody helped me, nobody helped me, nobody helped me*” (P1), “*No-one No-one cares I'm alone*” (P4) In summary, what has been shown in literature is that mothers are not able to derive the support that they need from their support networks.

6.6 Summary

The qualitative results revealed the participants’ experiences with the condition of the child, as well as the participants’ identification and perceptions of the diagnosis of the child’s condition. Additionally, the experiences with (HCP) such as the interactions with HCP and “Personal and environmental factors” are also recorded. The study also found educational levels of participants and language a barrier linked to the lack of knowledge of the participants about the condition, but the majority did know the reasons. The majority of participants were satisfied with the information and treatment provided to them. This current explorative qualitative study presents additional five other factors (prolonged labour, pulling of arm during delivery, procedures aimed at saving of mother’s or child’s lives, birth attendant’s poor skill/fault) perceived to contribute to development of Erb’s Palsy.

CHAPTER SEVEN

SUMMARY, LIMITATIONS, CONCLUSION, AND RECOMMENDATIONS

7.1 Introduction

In this final chapter, a summary of the study will be provided. The limitations of the study will be discussed, and the most important findings of the study will be highlighted in the conclusion and, finally, recommendations emerging from the study will be outlined.

The aim of the current study was to determine the profile and caregiver experience of infants with obstetric Erb's Palsy seen at Groote Schuur Hospital. The study included, the medical cases of children accessing the hospital from 2008 to 2015. Using a quantitative retrospective method with a data gathering instrument, the study specifically investigated the demographic characteristics, medical characteristics. Erb's Palsy is a common condition in children which mostly occur due to difficulty encountered during delivery. It can lead to lifelong abnormality depending on the nature and extent of the damage (Louis et al., 2010). Physiotherapy is the treatment for rehabilitation of disease/conditions and deformities (either congenital or acquired) (WCPT, 2013).

The study used both quantitative and qualitative approaches. A data extraction sheet was used to collect data. A record review was conducted and data was retrieved from patient files and entered into a data extraction sheet. Caregivers of Erb's Palsy children were recruited and interviewed for the qualitative component of the study. Data was analysed and presented in tables, figures and the result were qualitative data was developed into themes and presented

narratively. Ethical approval was obtained from the ethics committee at the University of the Western Cape and permission was obtained from hospital management to conduct the study. The quantitative results indicated that the mean age of the study population was 3.8, and this age is markedly older than that reported in other studies. It was also found that 43.8% of the files were of males (42) and 56.3% were (54) females. Findings only showed a significantly positive relationship ($r_{95} = 0.337, p = 0.001$) between the type of delivery and severity of Erb's Palsy. The qualitative results revealed the lack of the knowledge of the mother or caregiver and described difficulties in obtaining information and many were dissatisfied with the information provided by health professionals particularly at the time of initial diagnosis. The mothers also experienced emotional problems as a result of their children's' condition.

7.2 Limitations of the study

This section highlights the limitations of both the quantitative and qualitative phases of the study.

7.2.1 For the quantitative phase

1. Data was obtained from a records review and missing data could have affected the outcomes of the study.
2. The sample of this study was conveniently selected from one hospital in South Africa and the sample size was relatively small. Thus generalisation of the findings to other settings is limited.

7.2.2 For the qualitative phase

1. Given the fact that the interview was conducted within the hands clinic at the hospital, the participants might have refrained from mentioning vital information due to fear of staff there.
2. The interview was conducted in English, despite the fact that English is not the home language of both the researcher and the participants, although, most of the participants indicated they could speak English and agreed to be interviewed in English.

7.3 Conclusion

The study indicated that within this setting Erb's Palsy was most common among females.

Additionally, the most common type of delivery associated with Erb's Palsy was breech delivery.

The most common documented forms of physiotherapy techniques provided for children with Erb's Palsy in setting were stretching and strengthening exercises as well as education. There was a lack of knowledge amongst the mothers about the condition. Despite having limited knowledge, they showed good appreciation regarding the rehabilitation their children received. Caring for a child with Erb's Palsy however resulted in emotional challenges experienced by the mothers of these children. Support received was mainly from family members.

7.4 Recommendations

7.4.1 Recommendation for research

- This study recommends more investigations about the mother's emotions, mother's awareness, experience and coping strategies might yield outcome which can be used in developing a model for psychological support and treatment planning.
- It is also recommended that a prospective study is done to determine the structure, process and outcomes of physiotherapy management of patients with Erb's Palsy in the local setting is conducted as a retrospective study is often associate with missing certain important data
(as indicated in the present study).

7.4.2 Recommendation for clinical practice

- Clinicians should consider educating mothers about the condition of the children to reduce the level of anxiety and emotions being experienced by mothers as a result of Erb's Palsy.
- Various counselling centres need to be made available and accessible to these individuals, as depressive mood can easily overcome the caregivers of the child with Erb's Palsy.
- Physiotherapists should explore the use of constraint-induced movement therapy in the management of children with Erb's Palsy.

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APPENDIX A

Data extraction sheet

Date of data collection:

Section A: Socio-demographic data

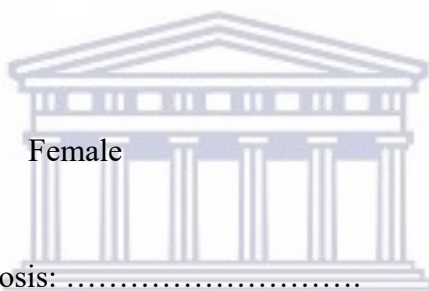
Child's information

Date of birth of child:

Gender:

Male

Female



Age at Erb's palsy diagnosis:

Age of gestation (weeks):

Breech delivery (Y/N):

Type of delivery (Please select appropriate type):

Normal		
Forceps		
Vacuum extraction		
Caesarean		

Weight at birth (kgs):.....

Caregiver information

Employment status:

Number of children:

Area of residence:

Maternal adverse events:

Treatment and rehabilitation information

Side affected with condition:

Level of impairment:

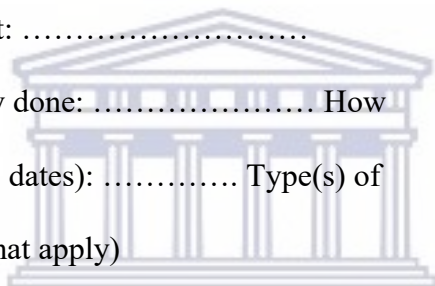
Date of start of treatment:

Date of End of treatment:

If yes, when was surgery done: How

many times: (provide all dates): Type(s) of

nerve injury (select all that apply)



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Neurapraxia	
Neuroma	
Ruptures	
Avulsions	

Comorbidity:

Mallet score:

Was surgery conducted (Y/N):

Medical treatment:

Physiotherapy received Yes/No

Date of commencement of physiotherapy:

Frequency of physiotherapy:

Content of physiotherapy (More than one option can be chosen)

Massage	
Strengthening Exercises	
Sensory stimulation	
Stretching exercises	
Education	
Other	



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APPENDIX B

INTERVIEW GUIDE FOR CAREGIVERS

1. Exploring the knowledge of caregivers regarding Erb's Palsy :

Can you describe according to you what your child's problem is?

Is there something wrong with the child's arm? Describe what it is, why can't the child move the arm?

Why do you think your child has this problem/what is the cause of the problem?

Probes

- How was the delivery of the child?
- How did you know that the child can't move the arm?

Describe your experience of having a child who is not moving an arm?

How a child with an arm that is not moving is treated?

2. Experiences of physiotherapy services

Describe your experience with the child's treatment?

Describe your experience with the child's physiotherapy treatment?

Would you comment on the extent to which you were involved by the physiotherapists in your child's rehabilitation?

Probe

- Did they discuss procedures with you?
- What demonstrations did they give you of what to do at home Where you give room to ask questions?

Did the service provider allow you enough time to ask questions?

Do you think they answered your questions very well?

Do you think you were given enough information regarding the child's condition and its treatment?

Tell me more about this information?

Who gave you this information?

Who provided you with information?

How have you been supported ever since you knew that the child had a problem with moving an arm?

Probe

- Did you receive assistance from health service?
- Did you receive assistance from community?

Do you think you were given enough information regarding support services for children with

Erb's palsy?

Probe

- General information about Erb's Palsy (cause, prognosis, management)

Do you think you were given enough information regarding the child's condition and its management?

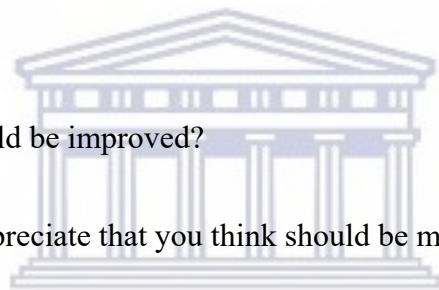
Probe

- Tell me more about this information?

What else can you tell me about the treatment at the hospital?

Probes

- What do you think should be improved?
- What Things do you appreciate that you think should be maintained



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APPENDIX C



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-95912172542

E-mail: khdejaabd@yahoo.com

INFORMATION SHEET

Project Title: PROFILE OF AND CAREGIVER EXPERIENCES OF INFANTS WITH OBSTETRIC ERB'S PALSY TREATED AT A TERTIARY INSTITUTION

What is this study about?

This is a research project being conducted by Khadija Abuaraba at the Groote Schuur Hospital Western Cape, South Africa. We are inviting you to participate in this research project because you are a caregiver of a child who has Erb's Palsy. The purpose of this research project is to determine profile and caregiver experience of infants with obstetric Erb's palsy seen at Groote Schuur hospital.

What will I be asked to do if I agree to participate?

You will be asked to take part in an interview that could last about 45 minutes to an hour. This interview will take place at a time and place that is convenient for you. It will also be conducted in a language that you are familiar with. The interviewer will request your knowledge about your child's condition (Erb's Palsy) and the experiences you had with the physiotherapy treatment.

Would my participation in this study be kept confidential?

We will keep your information confidential. To help protect your confidentiality, all data collected from children at the respective hospital will be kept confidential in a locked file to which only the researcher has access. Confidentiality and the right to withdraw from the study at any time will be assured. The information obtained in the interviews is anonymous and will not contain information that may personally identify you. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

What are the risks of this research?

There are minimal risks involved in participating in this study. Should sensitive matters arise we will refer you appropriately.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator and therapist manage Erb's Palsy better in future.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. This means that the treatment your child is receiving will not be jeopardised.

What if I have questions?

This research is being conducted by Khadija Abuaraba, Department of Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact the supervisor, Prof A Rhoda at: Department of Physiotherapy, UWC, Bellville, Cape

Town.

Tel: 021 959 2546

Email: arhoda@uwc.ac.za

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Head of Department: Prof A. Rhoda

Email: aroda@uwc.ac.za

Telephone: 0219592542

Or

Dean of the Faculty of Community and Health Sciences: Prof J. Frantz

Email: chs-deansoffice@uwc.ac.za

Telephone: 0219592631

University of the Western Cape

Private Bag X17

Bellville 7535

Or

The Chairperson

Senate Research Grants and Study leave committee

Prof Bharuthram

Email: rbharuthram@uwc.ac.za

Telephone: 0219592702



University of the Western Cape

Private Bag X17

Bellville 7535

Or

The Chairperson Faculty of Health Sciences Research ethics Committee

University of Cape Town

Prof Blockman

Tel: 021 406 6338

Bellville 7535

Or

The Chairperson Faculty of Health Sciences Research ethics Committee

University of Cape Town

Prof Blockman

Tel: 021 406 6338



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APPENDIX D



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-95912172542

E-mail: khdejaabd@yahoo.com



CONSENT FORM

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**Title of Research Project: PROFILE OF AND CAREGIVER EXPERIENCES OF
INFANTS WITH OBSTETRIC ERB'S PALSY TREATED AT A TERTIARY
INSTITUTION**

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name.....

Participant's signature.....

Date.....

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: KHADIJA ABARABA

University of the Western Cape

Private Bag X17, Belville 7535

Telephone: (021)959-

Cell: 0794894609

Fax: (021)959-1217

Email: khdejaabd@yahoo.com



**UNIVERSITY of the
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APPENDIX E



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-959

E-mail: khdejaabd@yahoo.com



Project Title: PROFILE AND CAREGIVER EXPERIENCE OF INFANTS WITH OBSTETRIC
ERB'S PALSY SEEN AT GROOTE SCHUUR HOSPITAL

Wat is hierdie studie oor?

Dit is 'n navorsingsprojek wat deur Khadija Abuaraba by die Groote Schuur –hospital Westelike Provinsie, Suid-Afrika. Ons nooi u om deel te neem in hierdie navorsingsprojek, want jy is 'n versorger van 'n kind wat Erb se Palsy het . Die doel van hierdie navorsingsprojek is om die rol van fisioterapie in kinders wat ly aan Erb se verlamming te bepaal.

Wat sal ek gevra word om te doen as ek dit eens om deel te neem ?

Jy sal gevra word om deel te neem in 'n onderhoud wat sowat 45 minute kan duur tot 'n uur . Hierdie onderhoud sal plaasvind op 'n tyd en plek wat gerieflik is vir jou. Dit sal ook uitgevoer word in 'n taal wat jy verstaan. Die onderhoud sal jou kennis oor jou kind se toestand (Erb's Palsy) en die ervarings wat jy gehad het met die fisioterapeutiese behandeling ondersoek.

Jou deelname aan hierdie studie sal vertroulik gehou word ?

Ons sal jou inligting vertroulik hou. Om jou vertroulikheid te beskerm, sal die data wat versamel word in 'n geslote lêer gehou word . Net die navorser sal toegang tot die leer het. Vertroulikheid en die reg om te onttrek van die studie op enige tyd sal verseker word. As ons 'n verslag of artikel oor hierdie navorsingsprojek skryf , sal jou identiteit beskerm word tot die maksimum mate moontlik

Wat is die risiko's van hierdie navorsing ?

Daar is 'n minimale risiko's wat betrokke is in deelname aan hierdie studie. Indiennodig, sal ons u toepaslik te verwys .

Wat is die voordele van hierdie navorsing ?

Hierdie navorsing is nie ontwerp om jou persoonlik te help nie, maar die resultate kan help om die ondersoeker en terapeute om Erb's Palsy beter in die toekoms te behandel .

Moet ek in hierdie navorsing en kan ek ophou deelneem op enige tyd?

Jou deelname aan hierdie navorsing is heeltemal vrywillig. Jy kan kies om nie deel te neem nie. As jy besluit om deel te neem in hierdie navorsing, kan jy ophou deelneem op enige tyd. As jy besluit om nie deel te neem aan hierdie studie, of indien jy ophou deelneem op enige tyd, sal jy nie in

gestraf of enige voordele wat jy anders kwalifiseer verloor. Dit beteken dat die behandeling jou kind ontvang word, sal nie in gevaar gestel.

Wat gebeur as ek vrae?

Hierdie navorsing word uitgevoer deur Khadija Abuaraba, Departement Fisioterapie aan die Universiteit van die Wes-Kaap. Indien u enige vrae oor die navorsingstudie self, kontak asseblief die studieleier, prof A Rhoda by: Departement Fisioterapie, UWK, Bellville, Kaapstad.

Tel: 021 959 2546

E-pos: arhoda@uwc.ac.za

Indien u enige vrae oor hierdie studie en jou regte as 'n navorsingsprojek deelnemer of as jy wil enige probleme wat jy met betrekking tot die studie ervaar rapporteer, kontak:

Prof A. Rhoda

Email:aroda@uwc.ac.za Telephone:

0219592542

Or

Prof J. Frantz

Email:chs-deansoffice@uwc.ac.za

Telephone: 0219592631

University of the Western Cape
Private Bag X17

Bellville 7535

Or

Die Voorsitter Fakulteit Gesondheidswetenskappe Navorsingsetiekkomitee

University of Cape Town

Prof Blockman

Tel: 021 406 6338



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APPENDIX F



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2542, Fax: 27 21-959 1217

E-mail: khdejaabd@yahoo.com

TOESTEMMINGS VORM

Titel van Navorsings Projek: PROFILE OF AND CAREGIVER EXPERIENCES OF INFANTS WITH OBSTETRIC ERB'SPALSY TREATED AT A TERTIARY INSTITUTION:

Die studie is aan my beskryf in 'n taal wat ek verstaan en ek stem vrylik en vrywillig in om deel te neem . My vrae oor die studie is beantwoord . Ek verstaan dat my identiteit nie bekend gemaak sal word nie en dat ek uit die studie kan ontrek sonder om 'n rede te gee eniger tyd en dit sal my nie negetief beïnvloed nie.

Deelnemer se naam

Deelnemer se handtekening

Datum

Indien u enige vrae oor hierdie studie of wil enige probleme wat jy ervaar het met betrekking tot die studie aan te meld , kontak die studie koördineerder :

Studie -koördineerder se Naam:: Khadija Abuaraba

University of the Western Cape

Private Bag X17, Belville 7535

Telephone: (021)959-2542, Cell: 079 489 4609 Email: khdejaabd@yahoo.com



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APPENDIX G



YU NIVESITHI YASE NTSHONA

KOLINI

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959, Fax: 27 21-95912172542

E-mail: khdejaabd@yahoo.com



Iprojekithi sihloko: PROFILE OF AND CAREGIVER EXPERIENCES OF INFANTS WITH OBSTETRIC ERB'S PALSY TREATED AT A TERTIARY INSTITUTION

Ingantoni lemfundo?

Oluphando projekithi olwenziwe ng Khandiji Abuaraba enyunivesi yase Ntshona koloni. Siyakumema uzothatha inxaxheba koluphando lwe projekithi kuba ungumnakekeli wabantwana abane Erb's palsy yase Ntshona koloni lokho yimiphumela ebunzimeni bokubeletha umntana. Futhi injongo yoluphando lwe projekithi kukutholisisa esinesibalo se Erb's palsy eNtshona koloni, oku kunqume isithombe emhlola mpilo sabantwana abane Erb's palsy, ukuze kunqume ukuphathwa kwezokwapha kunye ne physiotherapy, ukuze kulolwe ulwazi

Iwabanakekeli babantwana abane Erb's palsy. Ifomu yolwazi yalemfundo ingaluncedo xa isibhedlele kunye no mnyango we physiotherapy ba beka izizinto ezizotshintsha kuqala kwi Erb's palsy, futhi xakuhlolisiswa imiphumela yemizamo yenteke uyakubanceda noqirha, physiotherapy kunye nabahlengikazi ukuze kuvikelwe okanye kwenziwe kubengcono kubantwana abasando zalwa ekungsfumanini ukulimala lonto iyabaluncedo emntaneni.

Yintoni enobuzwa ukuba ndingavuma uthatha inxaxheba?

Uzobuzwa ukuba:kuzofunwa ukuba utyikitye phantsi imvume ukuba uyavuma ukuthatha inxaxheba kule mfundo phambi kokuba uthathe inxaxheba kule mfundo uzobuzwa unike ulwazi lwakho nge Erb's palsy kunye nophatho lwe physiotherapy esibhedlele,Le mfundo izo kwnziwa esibhedlele sase Ntshona koloni eMzantsi Afrika .Kuqikelelwa nje ngesikhathi sokwalashwa khona esibhedlele kuzobuzwa ngesifo iErb's paslykwayo uphatho lwe physiotherapy esibhele .Le mfundo izokwenziwa esibhedlele sase Red Cross eNtshona koloni eMzantsi Afrika.Kuqikelelwe ukuba ngexeshana lokuphiliswa esibhedlele kuzokubuzwa ngesifo iErb's pasly, imithi esetyenziswayo ,uphatho lwe physiotherapy, izithombe zeibhedlele kunye nolwazi lwabanakekeli base sibhedlele, uzophendula ngendlela yosebenzisa konke okanye oko = 100% ixesha elininzi, njengesiqhelo =75% , ixeshana eliqhelekileyo = 50% , ngamanye amaxesha =25% zange okanye akunoze =0.

Ingaba ukuthatha inxaxhema kwam kule mfundo izo gcinwa iyimfihlo?

Sizokwenza kangangoko ukungcina inukacha zakho ziyimfihlo.Ukuze usize imfihlo yakho , kuzomele ungabhali igama lakho kwi fomu yemibuzo kwaye ubhale iminyaka yakho kunye no lwazilwakho zizothathwa. Imfundo izosebenzisa amanani kwi fomu yemibuzo ngakho akhomntu uzoyazi ukuba ungubani onikis ngencukacha.Ngumphandi kuphela ozabanegunya kukhombo

Iwama khadi. Ukuba esisigaba sishicilelwa kwi hambo phambili ye mpilo phephabhuku, ukuba nguwe kuzovikelwa kude kubese kungcineni ngezinga okungenzeka ngalo. _____

Ukuba sibhala umbiko okanye isigaba ngmphandi we projekithi, ubuwena nencukacha zakho zizovikeleleka kangangoko.

Ngokuhambisana nezidingo zomthetho kunye/ okanye miyalelo esezingeni eliphezulu, sizo dalula kumntu obalulekileyo ofanelekileyo okanye/ kunye iziphathimandla inukacha eziza ekuqapheleni entweni edibanisa uphatho gadalala kwabantwana okanye ukungahoywa okanye kwenziwe umonakalo kwabanye.

Zithini ingozi zoluphando?

Zingakhona ezinye ingozi ekuthathweni inxaxheba koluphando lwemfundo..

Azikho ingozi ezingaziwayo ezidibanisa umntu othathe inxaxheba koluphando lwe projekithi. .

Zintoni izinto ozazizuka koluphando?

Inzuzo kuwe zihlanganisa ekufumaneni incukacha nge Erb's pasly kwaye nophatho kwi physiotherapy ezisetye nziswa esibhedlele sase Red Cross eNtshona kaloni eMzantsi Afrika zincele phambili ekuvikelweni abantwana abasando zalwa ekulimaleni kwaye ukusiza ekuthetheni kwaye nolwazi kwimeko ezifikelela ekulimalenikubomi obuphambili , Siyathemba kubomi obuphambili abanye abantu bangazuka kolufundo ekuphucukeni nokuvisisa kwesibalo kunye nophatho lwe physiotherapy kwisibhedlele sase Red Cross eNtshona koloni eMzantsi Afrika.

Kunyanzelekile ndibe yingxenye yoluphando kwaye ndinga kwazi uyeka nangaliphi na ixesha endifuna ngalo?

Ukuthatha kwakho inxaxheba koliphando kukuzi unela kwakho. Ungakhe ungathathi nxaxheba. Ukuba ukhetha uthatha inxaxheba koluphando, ungakwazi uyeka nangaliphi na ixesha ofuna ngalo. Ukuba uthathe isigqibo sokungathathi nxaxheba kolufundo okanye uyeke uthatha inxaxheba nangaliphi na ixesha, Awuzo kucinezelwa okanye ulahlekelwe ziziphiwo ubuzozifumana ezikufaneleyo

Likhona uncedo olukhoyo ukuba ndichaphazelekile ngendlela embi ngokuthatha inxaxheba kolufundo?

Kwimeko yesicwangciso kwaye impendulo ephezulu yokulimazeka kwabantwana abasandozalwa abane Erb's pasly sikucebisa ufune okanye uthunyelwa kwiziko lwempilo olulungileyo uzokufumana uncedo kwaye nokuhlansiseka kwimeko ugqirha okanye umongikazi ucele ulwazi olubanzi ngabantwana abasandozalwa abane Erb's pasly ekuncedeni ukulimazeka kwaye bazoboniswa aphobangafumana khona incukacha.

Ukuba ndinombuzo?

Oluphando lwenziwa ngu Khadija Abuaraba umfundi ophezulu wase yunivesi yase Ntshona koloni. Ukuba unembibuzo malunga nophando lwemfundo ubunqu, nceda ustalele.

Mama: .Khadija Abuaraba, Idolophu:

Tawragra.

Libya.

Umxeba womsebenzi: +218924934856 -+ 27794894609

Idilesi ye imeli: khdejaabd@yahoo.com

Ukuba unemibuzo malunga lemfundo kwaye amalungelo akho nje ngo mphandi okanye ukuba unqwenela ukuchaza ingxaki odibane nayo kulemfundo, Nceda ustalele:

Intloko ye physiotherapy

Umfundisi. Anthea Rhoda

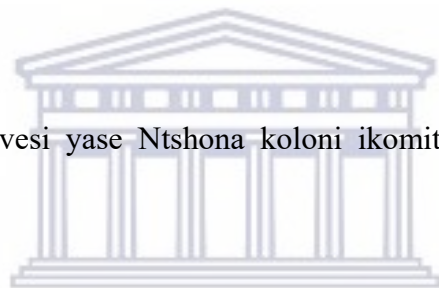
Umphathi we nqubo yokuhlala kwaye ye mpilo ye sayenis Yunivesi

yase Ntshona koloni.

Private Bag X17

Bellville 7535

Oluphando luvunyiwe yi yunivesi yase Ntshona koloni ikomiti yophando kunye nomkomiti lwezo luvo.



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APPENDIX H

IFOMU YEMVUME

Isihloko sophando projekithi: Indima ye physiotherapy kwi Erb's pasly.

Imfundo ihazwe ngolwimi endilaziyo ne endilivayoand kwaye ndiyazinikezela ndivuma ukuthatha inxaxheba.Umbuzo wam ngalemfundo iphendulekile.Ndiyava ukuba ubumna abuzochazwa mntwini kwaye ndingakwazi uphuma kwi pojekithi ngaphandle kochaza isizathu nangeliphi na ixesha lento ayizondichaphazela ntweni.

Igama lomntu othatha inxaxheba.....

Utyikityo lomntu othatha inxaxheba.....

Isuku.....

Ukuba unganemibuzo malunga nalemfundo okanye unqwenela uchaza ingxaki oyifumene malunga nalemfundo, stalela umphathi:

Umphathi wemfundo: KHADIJA ABARABA

Yunivesithi yase Ntshona koloni

Private Bag X17, Belville 7535

Umxeba womsebenzi: (021)959-

Umxeba weselula: 0794894609

Umxeba we fesi: (021)959-1217

Idilesi ye imeli: khdejaabd@yahoo.com



UNIVERSITY of the
WESTERN CAPE

**OFFICE OF THE DEAN
DEPARTMENT OF RESEARCH DEVELOPMENT**

17 March 2014

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Mrs K Abuaraba (Physiotherapy)

Research Project:	The role of physiotherapy in the management of ERB's palsy.
Registration no:	14/2/4

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

*Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape*

Private Bag X17, Bellville 7535, South Africa
T: +27 21 959 2988/2948 . F: +27 21 959 3170
E: pjosias@uwc.ac.za
www.uwc.ac.za

A place of quality,
a place to grow, from hope
to action through knowledge



GROOTE SCHUUR HOSPITAL

Enquiries: Dr Bernadette Eick
E-mail : Bernadette.Schmitz@westerncape.gov.za

Professor A. Rhoda
University of the Western Cape
Physiotherapy Department
Private Bag X17
BELLVILLE

E-mail: khdeiqabd@yahoo.com / arhoda@uwc.ac.za

Dear Professor Rhoda

RESEARCH PROJECT: The role of Physiotherapy In the Management of ERB's Palsy

Your recent letter to the hospital refers.

You are hereby granted permission to proceed with your research subject to the approval of Professor Dunn.

Please note the following:

- a) Your research may not interfere with normal patient care.
- b) Hospital staff may not be asked to assist with the research.
- c) No hospital consumables and stationary may be used.
- d) **No patient folders may be removed from the premises or be inaccessible.**
- e) Please introduce yourself to the person in charge of an area before commencing.
- f) Please discuss the study with Professor Dunn before commencing.
- g) Please provide the research assistant/field worker with a copy of this letter as verification of approval.
- h) Confidentiality must be maintained at all times.

I would like to wish you every success with the project.

Yours sincerely



DR BERNADETTE EICK
CHIEF EXECUTIVE OFFICER
Date: 19th December 2014

C.C. Mr. L. Naidoo, Dr B. Jacobs, Ms. C. Davids, Professor R. Dunn

G46 Management Suite, Old Main Building,
Observatory 7925

Tel: +27 21 404 6288 fax: +27 21 404 6125

Private Bag X,
Observatory, 7935

www.capegateway.gov.za

APPENDIX K



LIENEKE BOESAK DEVELOPMENT PROJECTS

E-MAIL: lienekeboesak@webmail.co.za

Trading as:
Integrated Learning Systems
Reg No: 2012/172787/07

14 September 2016

This serves to confirm that the Master's thesis of **KHADIJA ABUARABA** (Student Number: 3376370) entitled: "*Profile Of And Caregiver Experiences Of Infants With Obstetric Erb's Palsy Treated At A Tertiary Institution*" has been proof-read and edited for submission to the University of the Western Cape.

A handwritten signature in black ink, appearing to read 'L Boesak', written over a horizontal line.

LIENEKE BOESAK
Editorial Services