

Full Length Research Paper

Sociodemographic and Clinical Characteristics of Children with Erb's Palsy and the Clinical Specialization of Their Therapists - A Retrospective Study

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Erb's palsy accounts for 45% of brachial plexus birth injury (BPEP), with a 0.8-1 per 1,000 births incidence. Management of Erb's palsy requires the services of a physiotherapist, occupational therapist and other rehabilitation specialists. The socio-demographic and clinical characteristics of patients with Erb's Palsy and the clinical competencies of their therapists in Southeast Nigeria are unknown. This retrospective exploratory study reviewed all the available case folders of Erb's palsy patients managed in a named tertiary hospital in the Southeastern part of Nigeria between 2011 and 2020. The data collected were descriptively analyzed. A total of 93 case folders were retrieved and reviewed. The median weight of the patients at birth was 3.75kg. The median age of the children reviewed in these case folders was three weeks (1week - 9 years). Electrical stimulation (92.5%), home exercise program (84.9%), and passive mobilization (81.7%) were the most commonly prescribed treatment. Although the majority of the cases did not report the patients' prognosis (32.3%), most of those that reported had good prognosis (44.4%). Most of the Therapists had neither a peer-reviewed publications nor a postgraduate qualification in Paediatric Physiotherapy despite their many years of experience. Majority of the patients with Erb's palsy have high birth weight. Most commonly used treatment modalities are electrical stimulation, passive mobilization and home exercise programme. Most Therapists have no specialization in Paediatric Physiotherapy.

Keywords: Erb's palsy, Physiotherapy, Clinical Specialization, Evidence Based Practice.

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INTRODUCTION

Erb's palsy, also known as obstetric palsy, is a partial or complete muscle paralysis or loss of sensation resulting from injury to the C5, C6 nerve root of the brachial plexus (Stutz, 2021). Among other etiologies, birth trauma and compression of the nerve roots are the highest cause of brachial plexus injury (Jeevannavar et al, 2020). Erb's palsy accounts for 45% of brachial plexus birth injury with an incidence of 0.8-1 per 1,000 births in the US population (Shah and Ganjwala, 2018), and 0.42 to 4.6 cases per 1,000 births in Rhode Island (Evans-Jones, et al., 2017). A survey by Ogwumike et al., (2014) reported that Erb's palsy was the most frequently managed new-born brachial plexus palsy in the Paediatric unit of the Physiotherapy Department in University College Hospital Ibadan. A similar study by Ugboma and Omojunikanbi (2010) in the University of Port Harcourt Teaching Hospital reported that delivery in a private hospital was a significant risk factors associated with increased prevalence of Erb's palsy in the Niger Delta region. Erb's palsy is no doubt the most common birth injury associated with difficult breech and forceps deliveries which can vary from bruising to avulsion of the brachial plexus and in some cases caused by clavicular fracture (Ojumah et al., 2017). The affected upper limb in patients with Erb's palsy usually presents with adducted arm that is internally rotated at the shoulder joint, a pronated forearm and a flexed wrist that has been typically referred to as waiters tip position (Srilakshmi and Chaganti, 2013).

The location of Erb's point is at the upper trunk 2-3 cm superior to the clavicle (Abakay, et al., 2020). The upper trunk of the brachial plexus gives rise to the axillary, musculocutaneous and suprascapular nerve which are usually affected in the paralysis (Shah and Ganjwala, 2018). A thorough understanding of the anatomy and pathophysiology related to this condition is a sine qua non to an effective management of patients with brachial plexus injury. Diagnosis of brachial plexus injury is based on a number of systems and by grading the severity of the injury. Neurological examination typically assesses the absence of Moro-reflex, muscle power and skin sensation. EMG/nerve conduction tests or studies to determine the presence of fibrillation potentials which confirms denervation (Pareson, 2017). The denervation can be classified as neuropraxia, neurotmesis and axonotmesis which relate to muscle affection and level of activity and as well as prognosis (Menorca et al., 2013). It is therefore important to understudy the management of this condition especially in this environment. Critical to the management of Erb's palsy is the services of a physiotherapist, occupational therapist or rehabilitation management specialists and sometimes surgeon for reconstructive surgery of nerves and soft

tissues. Erb's palsy and its management place a lot of physical, psychological, financial, social and emotional burden on families and the society at large (Louden et al., 2015). Physiotherapy for this condition involves prevention of further damage through education, maintenance of joint range of motion, improving the muscle strength and patients functional performance. Abuaraba, (2016) in his work reorted that the physiotherapy techniques used in the management of children with Erb's included stretching and strengthening exercises as well as therapeutic massage and exercises. Parent and caregivers are core members of the rehabilitation team hence the need to incorporate family centered planning (FCP). Parents are encouraged to carry out specific exercises with their children two or three times a day in the comfort of their own home, a vital component of therapy known as home exercise program (HEP). These exercises can as well be carried out anywhere appropriate and comfortable. Most children presenting with this injury from birth recover between two to four months of age, although it can take up to two years to recover and about 80 – 90 % of these children may regain normal or near normal function (Crawford et al, 2013). It has been estimated that the rates of spontaneous recovery range from 66% to 92% (Hale et al, 2010).

Several Studies (Ugboma and Omojunikanbi, 2010; Ogwumike et al, 2014; Omole, 2016) have reviewed the hospital casefiles of children with Erb's palsy in several regions of the country, but none has been reported for the Southeast region. Also, literature appears silent on information regarding family centered planning, home exercise programme, detailed characteristics of the therapies and clinical specialization of the therapists involved in managing these cohorts. This study therefore aimed to investigate the clinical and demographic characteristics of children with Erb's palsy as well as the details of the therapies and therapists specialization, in a teaching hospital in Enugu state.

METHODS

Study site

This study employed a retrospective quantitative design to review case folders within a ten years period after a preliminary investigation of possible case folders available in the store.

Ethical approval

Ethical approval was obtained from the research and ethical committee of the Enugu state university teaching hospital (ESUTH) park lane Enugu. The study adhered strictly to the Helsinki declaration of 1964 (Skierka et al., 2018).

Eligibility criteria

Only clinical case folders of children less than 10years, diagnosed of Erb's palsy and managed in the Physiotherapy

Department of the hospital between 2011 and 2020 were included in this review.

Procedure for data collection

Data Source: Records of the admission register of patients admitted to the inpatient physiotherapy department of a tertiary care centre in Enugu were used for the study. The record book of patients that attended or are still attending physiotherapy between 2011 and 2020 was retrieved and the folder numbers of children referred to physiotherapy who were diagnosed of Erb's palsy were traced. The folder numbers obtained were used to retrieve the individual folders for onward extraction of information. A maximum of 20 folders was randomly selected in each year. In any year with less than 20 case folders, all the case folders were selected and assessed.

Data Extraction Instrument

A self-developed structured proforma was used to extract required information from the selected case folders. It has four domains (with the following items): sociodemographic domain (age at presentation, weight at birth, sex of the baby, occupation of parents/ socio-economic status, health insurance scheme), clinical features domain (laterality, aetiology, duration of the condition, muscle tone, sensation, RoM, muscle bulk, muscle power, shoulder integrity, and general clinical presentation), treatment characteristics domain (type of treatment, frequency of treatment, duration of treatment, prognosis, and cost of treatment), and the therapist characteristics domain (years of practice, relevant peer-reviewed publications, relevant postgraduate qualification, use of outcome measures, report of reviews, use of family centered planning, discharge protocol/plan).

Extraction of the Data

Data was extracted from the records by licensed physiotherapists who were conversant with the health system of the institute using a code-book. Further details regarding the specialization of the therapist were obtained from the unit head through an interview. Expert consensus was relied upon to determine socioeconomic status based on the parents' occupation and educational level. Expert consensus was also used to evaluate level of specialization based on years of experience, postgraduate qualification and peer-review publication in the field of Paediatric Physiotherapy in line with the specialization guidelines of the National Physiotherapy Postgraduate College of Nigeria (NPPCN, 2018). The discharge protocol was assessed on the basis of whether the therapist reviewed the case, competently discontinued therapy for the child or referred the patient to another therapy center or that the patient absconded from treatment. Treatment was rated based on the number of modalities used, the duration of treatment, the use of outcome measures, and the prognosis. For folders where these items were not found, they were documented as not reported (NR). The retrieved data were entered into an excel spread sheet for onward analysis.

Re-evaluation

Given the small sample size (less than 100), re-evaluation of small dataset (10% of overall) was considered not relevant.

Statistical Analysis

Data collected were transferred to IBM SPSS version 15.0 and were analyzed qualitatively using descriptive statistics of mean, standard deviation, median, range, frequencies, percentages and bar chart.

RESULTS

Mean / Median Distribution of Patients' Variables

A total of 93 case folders were retrieved and reviewed in this retrospective study from the record unit of the department. Year 2019 had the highest distribution (17.2%) while 2013 had the lowest rate of (2.2%) (see Figure 1). The median weight of the patients was 3.75kg, and the age ranged from 1 week to 9 years with a median age of 3 years. The minimum and maximum numbers of treatment were between 1 and 139 treatments with a median value of median value of 9 treatments. The cost of treatment ranged from ₦500.00 to ₦1000.00 per treatment. The total cost of entire treatment ranged between ₦500.00 and ₦82,000.00 while the median cost was ₦8000.00 as shown in table 1.

Socio-demographic / Clinical Characteristics of Patients

Majority of the case folders reviewed had more male patients (54.8%) and revealed that most of the patients presented at the Physiotherapy clinic between 2-6 weeks (40.8%). However most of the patients reviewed presented as early as 1 week or less (31.2%); although, some presented even a year after (9.7%). Report on the patients' parent occupation showed that majority of the folders had no record of their (father and mother) occupation (33.3% and 39.6% respectively). However, among the case folders that reported this, most of the fathers (54.9%) were self-employed while the mothers were unemployed (44.6%). Most of these families (54.2%) belonged to the low class socioeconomic status as shown in table 2.

Most of the case folders reviewed assessed children with right sided Erb's palsy (59.1%). Most of the case files did not report the underlying cause of the condition (46.2%). However among those that did, obstetric injury was the most common cause of Erb's palsy (78.8%). Most of the patients received physiotherapy for 1 month (64.5%) and discontinued treatment at less than 6 months of having the condition (85.0%). Clinical evaluation of these patients revealed that most of them had normal muscle tone (51.7%), however among those with abnormal muscle tone, flaccidity (39.1%) was more prevalent. Also, majority of the patients had intact skin sensation (89.5%), full passive range of motion (81.3%), normal muscle bulk (74.0%) and normal shoulder integrity (92.1%). However, most of the patients had a gross muscle power less than 3 (76.2%). At presentation some had winged scapular (10.4%), subluxation (1.0%), limb length discrepancy (2.1%) and pain during passive mobilization (30.2%) while most had wrist drop (90.6%), as shown in table 3.

Table 1: Mean/Median distribution of variables from the case folders (N=93)

Variable	Min	Max	Mean	SD	Median	Ranges
Weight at birth (Kg)	3.00	6.00	2.57	2.09	3.75	6.00
Age at presentation (weeks)	3.00	3.76	25.75	74.9	3.0	467.00
Number of treatment(₦)	1.00	2.00	20.00	25.00	9.0	138.00
Cost of treatment per session (₦)	500.00	1000.00	827.95	238.82	1000.00	500.00
Cost of entire treatment (₦)	500.00	82000.00	17010.75	20785.00	8000.00	81.500

Table 2: Sociodemographic Characteristics of Patients Reviewed (N = 93)

Variable	Category	Frequency	Percentage	**(%)
Age at Presentation (weeks)	1.00	29	31.2	
	2-6	40	40.8	
	7-12	9	9.7	
	13-52	8	8.6	
	>52	9	9.7	
Weight at birth(kg)	Not reported	34	36.6	
	<2.5	1	1.0	1.7
	2.5-3.5	8	8.6	13.6
	3.6-4.5	37	39.8	62.7
	>4.5	13	14.0	22.0
Sex	Male	51	54.8	
	Female	42	45.2	
Fathers occupation	Civil/Public servant	25	26.9	40.3
	Trader/Businessman	34	36.6	54.9
	Unemployed/Student	3	3.2	4.8
	Not reported	31	33.3	
Mothers occupation	Civil/public servant	9	9.7	16.1
	Trader/Businessman	22	23.7	39.3
	Unemployed/Student	25	26.9	44.6
	Not reported	37	39.8	
Socioeconomic status	High	0.00	0.00	
	Middle	17	18.3	
	Low	51	54.8	
	Not reported	25	26.9	

Key: **% = Relative Percentage of only reported cases

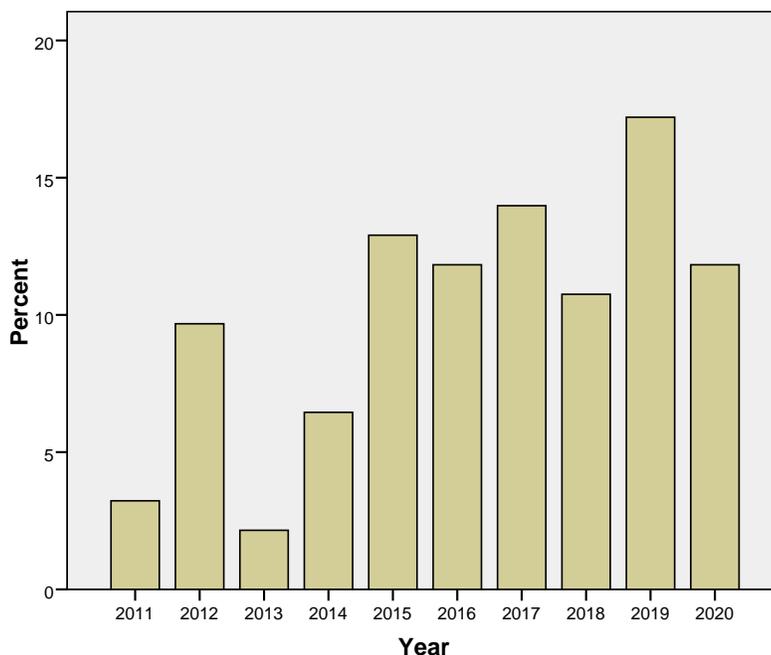


Figure 1: Distribution of case notes based on year

Summary of Physiotherapy Intervention Parameters

Electrical stimulation (92.5%), home exercise program (84.9%), and passive mobilization (81.7%) were the most commonly prescribed treatments. Although majority of the cases did not report the patients' prognosis (32.3%), most of those that did had good prognosis (44.4%). The total direct cost of physiotherapy management was not more than ₦10,000.00 for most of the cases reviewed (66.4%). Only 5.4% of the cases assessed had a health insurance scheme (National Health Insurance Scheme - NHIS) as shown in table 4.

Clinical Specialization of the Therapists

Most of the Physiotherapists involved with the management of patients as reported in the case folders had between 6 and 15 years of practice/experience (66.7%). However none of the Therapists had a peer review publication or a post graduate qualification in Paediatric Physiotherapy (100%). Oxford muscle grading (32.3%) for assessing muscle strength and tape rule (22.6%) for length/circumference measurements were the most commonly utilized outcome measure by the therapists as reported in the case folders. About 43.0% of the case folders were not reviewed (case re-evaluation) by the therapists. All case folders in this study reported elements of family centered planning (100%). However most of the patients discontinued therapy on their own (88.2%) while only 7.5% and 4.3% of the

cases were competently discharged and referred respectively. Generally, the physiotherapy intervention as contained in the case folders was rated good (66.7%) as shown in table 5.

DISCUSSION

This study investigated the clinical and demographic characteristics of children with Erb's palsy as well as provided details on their treatments and the specialization of the therapists. The study revealed that there was a spike in Erb's cases managed in the physiotherapy unit in the year 2019 unlike 2013 that had the least number. The relocation of the department from its initial centre to the current centre may be responsible for this difference. It was gathered that the department relocated to its present centre in 2013. It is therefore possible that some case files may have been misplaced or not properly stored for easy reach. It is also possible that some patients may have sought for treatment in other centers during this period of relocation. It is however difficult to attribute the quite obvious disparity in cases managed in different years to any particular factor(s) given that the year 2020 that should have been expected to be drastically affected by the lockdown due to the COVID-19 pandemic still recorded quite a number of cases. Similarly surge and undulation was also reported by Omole et al (2016) in Ife.

Report from this study showed that many of the babies were brought in early in their first week of life. This is clinically important as the earlier a treatment

Table 3: Clinical Characteristics and Presentation of the Patients (N = 93)

Variables	Category	Frequency (%)	Percentage	** (%) = $f/T \times 100$
Laterality	Rt Erb's palsy	55	59.1	
	Lt Erb's palsy	38	40.9	
Underlying cause	Obstetric injury	39	41.9	78.0
	Dystocia	10	10.8	20.0
	Cord compression	1	1.1	2.0
	Not reported	43	46.2	
Duration of treatment (Months)	1	60	64.5	
	2-3	31	34.3	
	4	2	2.2	
Duration of condition (months)	<6	79	85.0	
	6-12	4	4.3	
	>12	9	9.7	
Muscle tone[#]	Normal	45	48.4	51.7
	Flaccid	34	36.6	39.1
	Hypertonia	8	8.6	9.2
	Not reported	6	6.5	
Skin sensation	Poor	9	9.7	10.5
	Intact	77	82.8	89.5
	Not reported	7	7.5	
Joint ROM	Full	77	82.8	
	Reduced	14	15.1	
	Hypermobile	2	2.2	
Muscle bulk[#]	Normal	70	75.3	
	Atrophy	20	21.5	
	Hypertrophy	3	3.2	
Muscle power	0	9	9.7	10.8
	1	46	49.6	55.4
	2	19	20.4	23.0
	3	9	9.7	10.8
	>3	0	0	
	Not reported	10	10.8	
Shoulder integrity	Normal	81	87.1	92.1
	Retraction	1	1.1	1.1
	Rotation	5	5.4	5.7
	Depression	1	1.1	1.1
	Not reported	5	5.4	
Other Clinical Presentations	Waiters tip	88	94.6	
	Winged scapular	10	10.8	
	Wrist drop	84	90.3	
	Subluxation	1	1.1	
	Pain	29	31.2	
	LLD	2	2.2	

***: Relative percentage of reported cases, *f*: item frequency, *T*: total frequency of reported items only, LLD: Limb Length Discrepancy, #: reported in the case folders

Table 4: Therapy characteristics

Variables	Category	Frequency	Percentage	**(%)=f/T×100
Types of treatment	Electrical stimulation	86	92.5	
	Infra-red radiation	22	23.7	
	PM/ tactile stim/STM/ PNF	76	81.7	
	Weight bearing to the UL	28	30.1	
	Muscle strengthening excs	18	19.4	
	Educate positioning/ HEP	79	84.9	
	CIMT / splinting	13	14.0	
Prognosis	Poor	18	19.4	28.6
	Fair	13	14.0	20.6
	Good	28	30.1	44.4
	Very good	3	3.2	4.8
	Not reported	30	32.3	
Number of treatment sessions	<12	52	56.0	
	12-36	27	29.0	
	37-72	8	8.6	
	>72	6	6.4	
Cost of treatment per session (₦)	500	32	34.4	
	1000	61	65.6	
Cost of entire treatment ₦	<5000	28	30.1	
	5000-10000	31	33.3	
	10,500-30000	18	19.4	
	30,500-70,000	11	11.8	
	>70000	5	5.4	
Health Insurance	NHIS	5	5.4	

**%: Relative percentage of reported cases, f: item frequency, T: total frequency of reported items only

Table 5: Summary of therapist experience and specialization

Variable	Category	Frequency	Percentage
Years of experience	≥5 years	19	20.4
	6-10 years	29	31.2
	11-15 years	33	35.5
	>15 years	12	12.9
Publication	None	93	100.0
Postgraduate qualification	None	93	100.0
Outcome measure	Oxford muscle grading	30	32.3
	Tape rule	21	22.6
	Childhood Myositis Assessment Scale	2	2.2
	Active Movement Scale Evaluation Form	2	2.2
	Gilbert Tassan Scheme	1	1.1
Review	Done	53	57.0
	Not done	40	43.0
Rating of treatment	Poor	16	17.2
	Good	63	67.7
	Excellent	14	15.1
Reason for treatment discontinuity	Discharged	7	7.5
	Referred	4	4.3
	Self-discharge	82	88.2
Family Centered Planning	Yes	93	100.0
	No	0	0.0

commences, the better its outcome and related sequelae (Frade et al, 2019). Erb's palsy is said to resolve completely within the first year of life in relatively 70-80% of cases (Crowford et al 2013). In addition, close to 100% recovery is expected to be achieved if treatment begins in the first four weeks after birth (Basit et al., 2021). Also, complete recovery is unusual in cases where the function of the biceps does not recover soon after three months (Chung et al., 2012). A good number of the variables were not report because they were not documented in the case folders by the Therapists. This was also reported in a similar retrospective case review of Erb's palsy management in University College Hospital (UCH) by Ogwumike et al., (2014). This seemingly abnormality could be as a result of the lack of specialty guideline for the evaluation and management of this condition in Nigeria. It is also possible that the high workload that therapists are exposed to on daily basis may have had some limitations in their proper documentation. It is therefore recommended that the paediatrics and neurology physiotherapy professional societies in Nigeria should make plans to develop a national guideline for assessing and reporting treatments of brachial plexus birth palsy.

Most of the cases reviewed in this study were of children with high body weight at birth, often described as macrosomia. Macrosomia has been implicated as a risk factor in cases that presented with Erb's palsy (Basit et al., 2021). Macrosomic babies of more than 3.5kg have been reported to have greater odds of birth injury (Mansor et al., 2010). Factors such as maternal diabetes, a history of fetal macrosomia, maternal obesity (Leddy et al., 2008), excessive weight gain during pregnancy (Heery et al, 2013), overdue pregnancy, maternal age (Said and Manji, 2016) may contribute to the increased risk of having a macrosomic baby.

It was also found that the parents of the children in the cases reviewed were mostly self-employed or artisans and mostly within the low socioeconomic group. This could have also contributed to the high birth weight of the patient given the documented evidence that poor nutrition (e.g. high caloric diets, which are easily affordable in this environment) during pregnancy is a risk factor for macrosomia (Zhu et al., 2019). It has been reported that about 86.9 million people in Nigeria live in extreme poverty and so ingest high glycemic index diets and soft drinks and less of dietary fibers (Inegbenebor and Okosun, 2019; Iheonu and Urama, 2019). Secondly, poor education may be fingered as a contributory factor. The National Commission for Mass Literacy, Adult and Non-formal Education revealed that more than 38% of Nigerians are illiterates (Iheonu an Urama, 2019). Sound education promotes adequate health seeking behavior and downplays cultural bias as well as peoples' mentality that hinders them from accessing health care (Weitzman 2017; Ekechukwu et al, 2018). Poor

utilization of antenatal services can also be associated with maternal literacy level and could spell doom as some complications which could have been identified and managed at this period may eventually be overlooked. It has been reported that sociocultural issue has been a major factor that makes women refuse to take cesarean section as an option when the need arises. Cesarean section is part of emergency obstetric care (EMOC) provided to effectively reduce maternal and child mortality rate as well as morbidities (Ugwu and de Kok, 2015). This practice possibly fueled by lack of exposure and literacy may be fingered as well for the increased prevalence of Erb's among these families of low socioeconomic status.

Majority of the cases were of right sided Erb's palsies. This finding is in tandem with Yarfi and Elekusi (2019). This could be as a result of the position of the baby relative to the birth attendants while assisting delivery. Also, a good number of the case files had no record of the underlying cause of the condition; however, obstetric injury was found to be the major underlying cause of the condition among those case files where their aetiology was properly documented. This however differs from the report of Omole, (2016) where dystocia was the most implicating factor. Although, the latter (dystocia) may sometimes be classified as part of the former (obstetric injury). In this study this two concepts were operationalized differently as used in this setting. While obstetric injury referred to causes such as cord compression, forceps delivery etc; dystocia specifically referred to pulling of the baby by the birth attendant.

This study also found that majority of the cases took less than 6 weeks duration from the day the baby was born to the time the management ceased. Erb's palsy normally presents with flaccid muscle tone and mobilization in the first week of life that usually precipitates pain with no limitation to passive range of movement whereas in this study those with normal tone out-numbered those with hypotonia. Majority of the cases had intact sensation but with the typical waiters tip presentation as was similarly reported by O'Berry et al (2017). Joint range of motion was full in most of the cases with normal muscle bulk. Winged scapular was present in few of the cases, this could have occurred secondary to muscle imbalance and weakness. Therapy sessions given included electrical stimulation, passive movement alongside tactile stimulation and proprioceptive facilitation, weight bearing on the affected limb, educating caregivers or parents on proper positioning and home exercise program were mostly used in the treatment of the patients. This corresponds partly with the work of Srilakshmi, and Chaganti, (2013) that included an adjunct therapy to their line of intervention. Other treatments given were infra-red radiation; strengthening exercises, use of constraint induced

movement therapy and splinting were also used in just a few cases.

Prognosis was found to be good in many of the cases; this may be attributed to their early presentation to the unit for management. Prognosis may also have been affected by the severity of the injury – an important determinant of recovery (Ekechukwu et al., 2017). Literature has it that complete severing of the plexus and the presence of Horner's syndrome are indicators of poor outcome (O'berrry et al., 2017). Also there has not been a consensus regarding spontaneous rate of recovery; it still oscillates between 66% and 92% (Hale and Bae et al., 2010). Moreover, there may be residual deficits in some children who have incomplete recovery by 2-3 years (Abid, 2016).

The number of treatment and the cost of treatment brings to focus the burden of this condition on the parents, the highest number of treatment occurred in one case costing the highest amount of money in this study. This brings to focus the need for effective treatment of this condition which is based on adequate knowledge of the condition (Yarfi et al., 2019). This study found that there was low utilization of National Health Insurance Scheme (NHIS) that ought to have lightened the economic burden of the management of this condition on the parents. National Health Insurance Scheme is among the health care reforms adopted by the Nigerian health system that was birthed in 2005 (Welcome, 2011). It aimed at tackling many of the public health challenges in Nigeria, however statistics shows that only less than 10% of the population utilizes this scheme (Aregbeshola, 2019; Asakitkpi, 2019). This implies that many of the vulnerable population are left at the mercy of health care providers (Okpani and Abimbola, 2015). This may be because of poor awareness and orientation in the use of this scheme. Surprisingly not everyone is adequately covered in the scheme, the scheme seems to target majorly the civil servants in different sectors of the economy hence self-employed citizens and artisans are appear left out (Alawode and Adewole, 2021). This is evidenced in this study as majority of the parents were self-employed who could not adequately access the scheme hence finance their health care through out-of-pocket expenditure.

This study also found that although the therapists in this facility under study had good years of experience, 11-15 year was in majority. Majority of Therapist with these years of experience fall within the ranks of Chief Physiotherapists. There are anecdotal evidences that this group of Physiotherapists usually work as supervisors to the younger Therapist who in most cases manage the patients and report back to Chiefs for authorization and ratification. This may be responsible for the increased number of treatment authorizations done by this group of physiotherapists. Few therapists with greater years of experience were involved in the management or by inference,

authorization of the case files. This group falls within the Directorate cadre who are chiefly involved with administrative duties with limited time for treatment except for few high profile personalities based on anecdotal evidence. Going by this finding, one would expect these therapists with greater years of experience should possess greater clinical competences or degree of specialization judging by postgraduate qualifications and peer-reviewed publications in the field of paediatric physiotherapy. The Lack of post graduate qualification in pediatric physiotherapy seen in this study may have been instrumental to the lack of published peer review paper. This is because further knowledge beyond undergraduate exposure is required to carry out an independent research with an impactful publication.

It was also found that outcome measures were rarely used in assessment of the cases. This could be because of the increased therapist-patient ratio which gives little time for extensive assessment of the patients (Cartmill et al., 2012). Also the lack of postgraduate exposure may be implicated. The postgraduate programme much more than the undergraduate training is expected to improve clinical reasoning and decision making that is driven by evidence based practice. Use of outcome measure is inevitable to the implementation of evidence based clinical practice and this is the bedrock for clinical research and publications.

Only a few of the cases reviewed were competently discharged from treatment as majority of the patients stopped attending therapy without any formal discharged. This could be attributed to the economic burden on the family and the stress of continuous attendance to therapy which may be a long program depending on the severity of the injury (O'berrry et al., 2017). Moreover depending on the type of injury on the nerve (axonotmesis, neurotmesis or neurapraxia) the rate of recovery differs, hence parents may become impatient to continue attending therapy till full recovery (Abid, 2016). This still occurred despite the use of family centered care which was seen in all the cases reviewed. Parents may also have become satisfied with the measure of recovery which the child may have attained and became complacent about further spending on the same condition (Ogwumike et al., 2014). It may also have been an oversight by the physiotherapists who may have not done a proper review and documented proper discharge protocol.

The results from this study should however be interpreted with caution especially given that this study was based on a secondary data with the possibility of missing items. The discussion here were based on what ought to be ideal and also some anecdotal evidences.

CONCLUSION

In conclusion, majority of the patients managed in this setting had high birth weight but presented early for management. Most cases of Erb's palsy this environment are right sided and receive treatment for about one month. The major treatment techniques used are electrical stimulation, passive mobilization and home exercise program. Most of the therapists have high years of experience with no peer review publications or postgraduate qualification and very few used outcome measures. The prognosis of Erb's palsy management here is good.

The need for proper documentation and use of appropriate outcome measure was recommended during clinical practice. Clinicians should be encouraged to engage in evidence based documentation and research as well as acquire postgraduate exposures geared towards improvement in clinical practice and outcome.

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