GPPIG NEWSLETTER

GHANA PAEDIATRIC PHYSIOTHERAPY INTEREST GROUP

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Welcome Message From Chair

The Ghana Paediatric Physiotherapy Interest Group is dedicated in empowering professionals within the physiotherapy fraternity to deliver top-notch physiotherapy care to the paediatric population.

It is recognised that education is a continuous process that require dedication and effort. To provide evidence-based interventions, the physiotherapist ought to stay abreast with current trends.

Hence, the executive board of the Ghana Paediatric Physiotherapy Interest Group is delighted to commence an annual newsletter to enhance the knowledge and skills of practitioners.
It is envisaged that the newsletters will pique the interest of practioners in seeking to be outstanding professionals.

Come aboard and let's acquire knowledge together!

Chair, GPPIG

Dorothy Ekua Adjabu (PhD)

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Acknowledgements

- *GPPIG Editorial board*
- *Ghana Physiotherapy Association Evidence Based-Practice Group*

Nuggets

- *Evidence-based practice in Cerebral Palsy*
- *Evidence– based practice in Obstetric Brachial Plexus Injury*

Inside this issue:

Mrs. Sandra Asante

VICE CHAIR

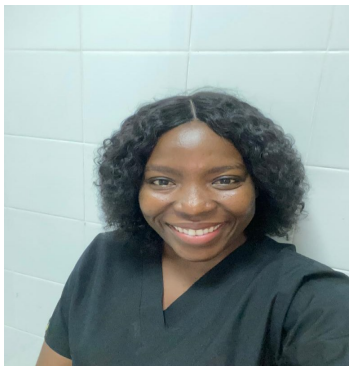
It is with great enthusiasm that I welcome you to our maiden newsletter. I am honoured to serve you as your vice-chair.

Together, we can achieve great heights of success and growth through the GPPIG newsletter!

Mrs. Sharon Kalitsi

SECRETARY

I am delighted to welcome you to the first edition of the GPPIG newsletter. This medium allows us to share experiences and innovative approaches that contribute to the wellbeing of our clients.



Miss Yvonne Ewurama Osei

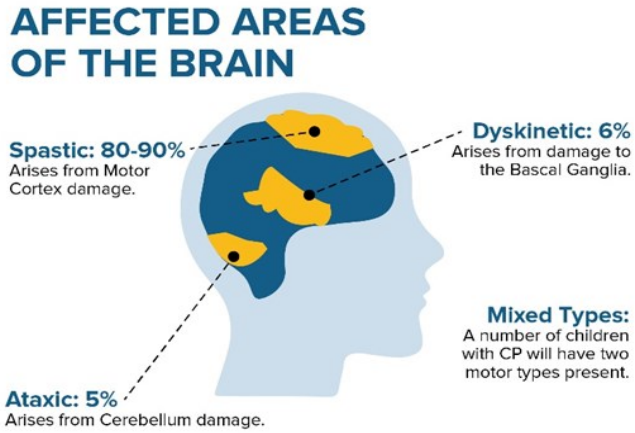
ORGANISING SECRETARY

Welcome to the esteemed GPPIG newsletter. This is a milestone in our journey to promote excellence in paediatric physiotherapy and provide evidence based practice in paediatric physiotherapy!

CEREBRAL PALSY

Damage to Cerebral Cortex causes spasticity in the hands or legs. Types include hemiplegia, diplegia, quadriplegia (Picture credit: rotobed.com)

Cerebral Palsy (CP) is a disorder of movement and posture caused by a malformation or lesion to the developing brain (1). Various aspects of the brain may be affected by the lesion and this correlates with the physical presentation of the child.



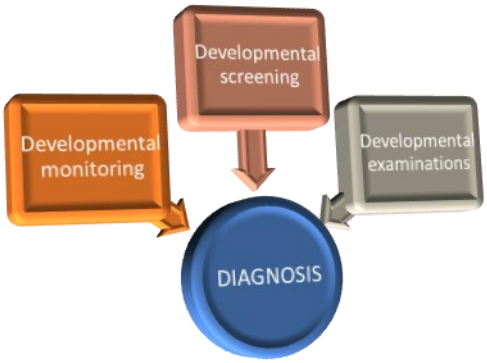
(Picture credit: healthmedley.com)

Evidence of Early Detection of Cerebral Palsy

A number of children with cerebral palsy may have two or more types present

Diagnosis may be made as early as 3 to 4 months old and this provides the physiotherapist with a great opportunity to begin early intervention. (2)

This can be achieved through three processes.



Processes in Diagnosing Cerebral Palsy

Damage to Basal Ganglia causes uncontrollable movements (dyskinesia) in muscle tone. (Picture credit: rotobed.com)

Developmental monitoring/surveillance - Babies who are at a higher risk of developing neurodevelopmental challenges are followed-up within the first two (2) years of life in order to identify problems early (2i).

Developmental screening – This checks age-appropriate developmental milestones. Tools for assessment include Infant Neuromotor Assessment, Bayley Scales of Infant Development-4, Developmental Inventory 3rd edition, Developmental Assessment of Young Children-2, Early Learning Accomplishment Profile, Infant Toddler Developmental Assessment-2 (2ii).

Developmental and Medical Examinations – This involves assessment of tone, reflexes, quality of movement, posture, motor skills as well as sensory problems such as vision or hearing. Various tests such as Magnetic Resonance Imaging (MRI), Computed tomography (CT), Electroencephalogram (EEG), genetic tests may be conducted to determine the cause of the condition and the area affected.

Prognosis for Early Intervention

It is recognized that children with cerebral palsy may reach 90% of their gross motor potential when they turn five (5) years, although most attain this by age three (3) through neuroplasticity of the developing brain (3).

The functional outcome of a child with CP depends on the effects of the lesion and activity-dependent neural reorganization of the brain (4).
Such activities are learned through exploration or environmental experiences, which may result in adaptive or maladaptive plasticity. Maladaptive plasticity may occur in a child when intervention is begun late or is substandard - in content or dosage (4).

Damage to the Cerebellum causes poor coordination and balance (ataxia).
(Picture credit: rotobed.com)

Evidence-Based Practice

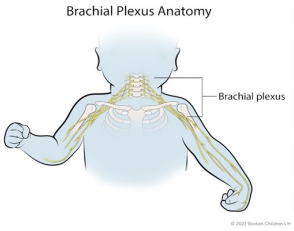
1. Rehabilitation at the health facilities with a duration of 30 - 45 minutes sessions per day is essential for neuroplasticity (5).
2. Home-based task-oriented exercise is a good complement to rehabilitation in the health facility since it may be expensive and time-consuming to treat the child on a daily basis, at the health facility (6).
3. At least 20 minutes of Virtual Reality therapy taken, twice a week for six weeks or more is highly beneficial for enhancing balance function (7).
4. Constraint-induced movement therapy may have a moderate effect on function of the more affected hand (8)
5. Include gait training and hand-arm bimanual intensive therapy and strengthening exercises as well as ankle-foot orthoses for motor impairment of the feet and the ankles. (9)
6. Physical therapy with hippotherapy provides similar effects in terms of gross motor function (10)
7. Intervention ought to focus on client-chosen goals and whole-task practice of goals. Clinicians' recommendation on interventions should be based on child/family preferences, age, and the child's ability (11).
8. To achieve performance of a leisure activity, incorporate interventions with activities which will assist child overcome environmental, personal and social limitations (11).
9. To achieve self-care goals, interventions should include adaptive equipment to improve independence (11)
10. To improve mobility (including transfers) there should be a focus on the real-life context of the child (11).

A child diagnosed with cerebral palsy may reach 90% of their gross motor potential by age 5

Damage to two or more areas may contribute to varied symptoms.
(Picture credit: rtobed.com)

What should be avoided?
Passive joint mobilizations, muscle stretching and prolonged stretching with the limb fixed (12)

OBSTETRIC BRACHIAL PLEXUS INJURY



The Brachial Plexus
(Picture credit: childrenshospital.org)

INTRODUCTION

The brachial plexus is a network of nerves that sends signals from the spinal cord to the shoulder, arm, and hand. They are responsible for cutaneous and muscular innervation of the entire upper limb. Obstetric brachial plexus injury (OBPI) is an injury to the brachial plexus in newborns sustained during labour and delivery.

Newborns may sustain excess lateral traction on the neck during passage through the birth canal or get stuck on the mother's pelvic bone (shoulder dystocia) causing nerve injury. Brachial plexus injuries cut off all or parts of the communication between the spinal cord and the arm, wrist, and hand. The child is unable to move the hand or entire arm. Incidence is estimated to be between 1to 3 in 1000 births.

The Situation in Ghana

The severity of a brachial plexus injury varies, depending on the part of the nerve that is injured and the extent of the injury .

A study by Hamzat and colleagues (2008) reported the prevalence of OBPI in Accra, Ghana to be 27%, the results of the study further indicated that birth weight exceeding 4.0 kg, vertex presentation and vaginal delivery were the noticeable co-existing factors for OBPI in Accra. From the study only 55.2% of OPBP cases were referred for physiotherapy within one month after diagnosis and the treatment disposition for majority (88.1%) of the children were not documented and only 4.8% were formally discharged from physiotherapy.

Another study by Yarfi et al. in 2019 showed that the prevalence rate of brachial plexus birth palsy was 14.7% out of a total of three hundred and twenty (320) cases reviewed over a 5– year study period in the Volta Regional Hospital (Now, Ho Teaching Hospital). Erb's palsy was found to be the modal type of OBPI in this population (93.6%).

Clinical Presentation

Symptoms depend on location on the brachial plexus that the injury occur and how severe it is. Injuries to nerves with roots higher up on the spinal cord, in the neck region affect the shoulder. If nerves that originate lower in the brachial plexus are injured, the arm, wrist and hand are affected.

Hence, patterns of presentation are based on the location of the damage:

- The most common site is in the upper cervical area (C5,C6,C7) and results in **Erb's Palsy** which has partial arm weakness- "waiter's tip" position—**Narakas I (no wrist-drop**), **Narakas II (wrist-drop present)**
- The second most common type is **Duchenne's Palsy** which has complete arm paralysis (C5-T1) - **Narakas IV**
- **Klumpke's Palsy** is the least common (C8-T1) type which has primarily hand weakness– **Narakas III**

Risk Factors

- Macrosomia (large for gestational age)
- Breech presentation
- Gestational diabetes
- Shoulder dystocia
- Small maternal stature/cephalopelvic disproportion
- Multiparity
- Prolonged labour
- Use of assistive delivery tools such as forceps or vacuum extractor

Diagnosis and Prognosis

- **Grade 1 or Narakas I:** Nerves are traumatized by the stretch and may recover completely in the **first four months**.
- **Grade 2 or Narakas II/ III:** Inside layer of the nerves is damaged but not the outside layer so nerves may regrow down the arm at a rate of about one inch per month.
- **Grade 3 or Narakas IV:** Nerves may have been ripped apart, developed a ball of scar, or been pulled away from the spinal cord. Recovery may require neuro-surgical intervention.

**The severity and location of the injury may not be apparent initially so physiotherapists ought to observe closely for signs of recovery.

OBPI occurs least frequently in newborns weighing < 4 kg and occurs three times as often in newborns weighing > 4.5kg.

Goals for Rehabilitation

The goals of rehabilitation for brachial plexus injuries include:

- Parental/ caregiver education about the condition.
- Family instruction for home program which involve proper positioning during activities of daily living
- Prevention of contractures, which can develop because of muscle imbalances.
- Increasing the child's awareness of the paretic limb.
- Muscle strengthening
- Assisting with normal development and function.

Muscle stretches are important part of therapy for children with brachial plexus injuries. Because children with weakened arms caused by brachial plexus injuries can't stretch their muscles through everyday activity, passive range-of-motion stretching is often necessary to maintain muscle length.

Physiotherapy Management

The initial goal of therapy is to prevent stiffness in affected joints through passive motion while facilitating the return of nerve function.

Some specific physiotherapy techniques in the management of OBPI palsy includes:

- Intense education and counselling of parents
- Appropriate Positioning and Handling
- Constraint Induced Movement Therapy
- Gentle mobilization of all joints
- Gentle massage
- Electrical Stimulation
- Play therapy
- Weightbearing
- Serial k-taping and splinting
- Scapular mobilisation

Points to Remember

Early diagnosis, referral and physiotherapy intervention are essential.

- OBPI can be a shocking diagnosis for parents; provide appropriate education!
- A significant percentage of cases could have been prevented with improved pre-natal care and delivery methods.
- Although the majority of the cases will recover sufficiently, at least 5% may not.
- Children who are diagnosed shortly after birth and begin physiotherapy soon afterwards stand the best chance at making a significant recovery.

PREVENTION AND EARLY INTERVENTION ARE VERY IMPORTANT.

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