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## Practical steps in the rehabilitation of children with speech and language impairment in Nigeria

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**Abstract:** Background: Medical and allied health professionals and educators are often the first point of contact for parents who are concerned with their child's communication abilities. Because there are few speech-language pathologists in Nigeria, it becomes imperative for medical and educational professionals to provide practical steps and suggestions to parents to help facilitate their child's speech and language development.

**Objective:** To provide an overview of speech and language development and impairment and ultimately empower professionals with the practical steps to guide

parents on ways to facilitate their child's communication development.

**Method:** Review of studies that have investigated methods of treating speech and language impairments was performed.

**Results:** The practical steps and suggestions presented have been proven to be effective at facilitating children's speech and language development.

**Conclusion:** Medical and allied health professionals and educators should avail the parents with appropriate and effective information that would enable them to address their child's speech and language impairment.

### Introduction

When Nigerian parents are concerned with their child's communication abilities, they often seek assistance from doctors and teachers because there are few speech-language pathologists practicing in Nigeria.<sup>1</sup> Medical professionals (e.g., paediatricians, otolaryngologists, psychiatrists, neurologists), allied health professionals (e.g., audiologists, physical therapists) and educators (e.g., teachers, schools administrators) often times are in a position to advise and provide suggestions to parents regarding their child's communication abilities. There are several practical steps and strategies that will be discussed in this paper that medical and educational professionals can suggest to parents to help facilitate their child's speech and language development.

#### *What is speech and language?*

Speech and language skills are needed when communicating and exchanging information. Speech is a system that relates meaning with sounds.<sup>2</sup> It consists of articulation (i.e., the physical production of sounds), voice (i.e., the quality, loudness and resonance of sounds), and fluency (i.e., the smooth and rhythmic flow of sounds and words). Language is a socially shared code for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols.<sup>3(p7)</sup> Language involves knowing its phonology (i.e., rule governed distribution and sequence of sounds), mor-

phology (i.e., structure of words and meaning of parts of words), syntax (i.e., rules governing the way words are combined and organized to form clauses, phrases and sentences), semantics (i.e., words related to their referents and meanings) and pragmatics (i.e., rules of social language).<sup>4</sup> Children are stimulated to communicate when motivated, cued and prompted.

#### *Speech and language development*

Infants start learning in utero. The fetuses can hear external sounds before birth. Their brain and sensory systems begin to prepare for the speech and language system in their environment. Newborns can make fine discriminations among the speech sounds they hear and prefer the sounds of the language they have been exposed to. Children soon acquire the phonemic (i.e., sound), phonological, morphological, semantic, syntactic, and pragmatic components of their native language.<sup>4</sup>

Cognitive, biological and social changes during infancy impact communication development. Children experience several milestones as they develop speech and language skills. At two months of age children begin cooing and have intentional communication. At six months their teeth erupt, their mandibles grow downward, their tongue and pharynx elongate resulting in production of consonant-vowel combinations (e.g., /da/). At twelve months, there is more dissociation of gross motor movements, greater dissociation of oral and pharyngeal struc-

tures resulting in more varieties of sound productions. Children universally have their first words at approximately twelve months of age. Also at twelve months, the diaphragm becomes more dome-shaped resulting in greater air intake and production of reduplicated and variegated babbling. At eighteen months, children are able to jargon, produce most vowels, and produce many consonants. They are able to use 5 to 10 single words and comprehend about 50 words. By twenty four months, fastmapping occurs and vocabulary expands to 50 words with the production of two-word combinations. These speech and language milestones continue throughout childhood.

### *Signs of speech and language impairment*

Children with speech and language delays and disorders have difficulties understanding what is said to them and have difficulties expressing their thoughts. A speech and language disorder refers to an impairment in a person's articulation of speech sounds, fluency, voice, comprehension and use of spoken, written or other symbol systems.<sup>5</sup> According to the American Speech-Language-Hearing Association<sup>6</sup>, signs of speech and language impairment include:

- Problems understanding what others say
- Difficulties following directions and recalling information
- Problems saying words and expressing thoughts
- Difficulties producing sounds that are clear and intelligible
- Troubles playing and interacting
- Problems reading and writing

### *Risk indicators*

A range of environmental, biological, genetic, and perinatal conditions may be associated with adverse developmental outcomes that result in speech and language impairments. Advances in medical technology make it possible for high risk children to survive. Risk indicators for learning disabilities, speech disorders and language impairments in children include low Apgar score, low birth weight, preterm birth, chronic otitis media, family history of speech and language disorders, exposure to environmental toxins, stroke, brain injuries, cancer (e.g., laryngeal, oral), limited language exposure, and poverty.<sup>7</sup> These risk indicators may result in children with delayed cognitive skills, limited attention, hearing loss, neurological disorders, intellectual disabilities, and physical impairments such as cleft palate, that negatively impact speech and language development.

### *Speech and language impairment in Nigeria*

Studies<sup>8-10</sup> that have investigated the prevalence of speech and language impairment in Nigeria reveal that 8-30% of individuals with communication concerns in Nigeria present with speech impairments. Some Funmilayo Falusi<sup>8</sup> study at Lagos University Teaching Hospital with children between ages six months and fifteen years with communication disorders in Nigeria revealed hearing

impairment was documented in 65%, speech disorders in 30%, rhinolalia (a nasal quality in speech) in 2%, and stuttering in 2% of the children. Aremu, et al<sup>9</sup> investigated children and adults who were referred for speech and language therapy at the University of Ilorin Teaching Hospital in North Central Nigeria. More than half (58%) of the patients had a diagnosis of deaf-mutism (the inability to speak), 21% had delayed speech development, 4% slurred speech pathology, 13% impaired speech, 3% stammering/stuttering and 1% with aphasia. Nwokah<sup>10</sup> studied disfluent bilingual Igbo/English in Anambra State Nigeria and reported that 9.2% of Nigerians were individuals who stutter. Research<sup>8-13</sup> on Nigerians with impaired speech and language abilities report individuals presenting with articulation disorders, fluency disorder (i.e., stuttering), and autism spectrum disorder.

### *The role of speech-language pathologists*

According to the American Speech-Language-Hearing Association<sup>14</sup> the role of speech-language pathologists include but are not limited to utilizing evidence-based approaches to intervention, counseling, collaboration with family members and other professionals, and identification of individuals at risk for or presenting with cognitive-communication disorders. Speech-language pathologists are trained to follow specific diagnostic procedures needed for differential diagnosis that consider the impact of cultural, ethnic, regional, linguistic, dialectical differences and socioeconomic factors that may impact speech and language learning and use.<sup>15-17</sup> Speech-language pathologists service individuals with articulation and phonological delays/disorders, voice disorders, fluency disorders, language delays/disorders, social pragmatic disorder, hearing loss, memory loss, language learning disabilities, alternative-augmentative communication needs, and reading and writing difficulties.

Speech-language pathologists are also trained to provide services to individuals with dysphagia, feeding and/or swallowing disorder. Feeding involves the manipulation of food in the mouth before swallow. Swallowing is the movement of the bolus from the oral preparatory stage to the oral stage, then from the pharyngeal stage to the esophageal stage, then finally to the stomach. Dysphagia can result in aspiration, airway obstruction, malnutrition, dehydration, constipation, and phagophobia, fear of swallowing. Speech-language pathologists are trained to assess for dysphagia and provide management techniques.

Parents should seek the services of speech-language pathologist when they are concerned about their child's communication abilities. Admittedly, there is a national shortage of speech-language pathologists in Nigeria, however, it is hoped that the Nigerian educational sector and the regulatory bodies should assist in training more speech-language pathologists so as to cater to the needs of Nigerians. Medical and educational professionals should refer parents to speech-language pathologists to

assess and treat children with communication disorders.

### *Speech and language assessment methods*

Norm-referenced and criterion referenced testing are two types of traditional standardized assessment measures used to assess the performance of children's speech and language abilities. Norm-referenced tests compare the child's performance to that of other children. Criterion referenced tests compare the child's performance on specific skill, grammatical structure, or linguistic concepts to independently predetermined criteria.<sup>18</sup> The advantages of most standardized tests is that they are well constructed so as to meaningfully compare children using clear administration and scoring criteria, validity, reliability and standardization measuring central tendencies and variability.<sup>19</sup>

There are many standardized tests that assess speech skills including the Goldman Fristoe Test of Articulation – Third Edition, the Khan-Lewis Phonological Analysis – Second Edition, the Structured Photographic Articulation Test – Second Edition, the Weiss Comprehensive Articulation Test, the Stuttering Prediction Instrument, the Stuttering Severity Instrument – Fourth Edition, and the Test of Oral & Limb Apraxia. Some of the standardized tests that assess language abilities include the Preschool Language Scale-5, the Clinical Evaluation of Language Fundamentals – Fifth Edition, the Peabody Picture Vocabulary Test – Fourth Edition, the Oral and Written Language Scales – Second Edition, the Test of Language Development – Primary/Intermediate Fourth Edition, the Test of Problem Solving- Third Edition, the Boston Diagnostic Aphasia Battery, the Scales for Cognitive Assessment of TBI, the Western Aphasia Battery – Revised, and the Test of Language Competence – Expanded Edition. Dysphagia is examined by performing a clinical evaluation of swallowing function, a fiberoptic endoscopic evaluation and ultrasound imaging.

Speech and language pathologists are often confronted with concerns about using standardized assessment tests with children from culturally and linguistically diverse backgrounds. Tests and other evaluation materials should not be culturally and racially biased. Standardized tests present with a number of biases including situation bias, linguistic bias, format bias, value bias and sampling bias. Lack of appropriate assessment materials for children from diverse and multicultural backgrounds can result in over identification, under identification or misidentification of children as having speech and language impairment. Accurate assessment of spoken and written language skills in children from culturally and linguistically diverse backgrounds should not depend solely on the use of standardized norm-referenced test procedures.<sup>18</sup> Alternative assessment measures are non-traditional assessment measures that should be used to determine a child's performance abilities. Alternative assessment measures include review of records, observations, ethnographic interviews, informal assessments, and use of processing-dependent and dynamic assessment measures.

### *Therapeutic methods*

Therapeutic methods used to treat children with speech and language difficulties are vast, diverse and individualistic. It involves use of prompts, cues and counseling. During therapy, speech and language skills are facilitated using the prompt hierarchy (i.e., general, verbal, visual and tactile prompts) with scaffolding towards independence. There are several approaches in a therapeutic program.<sup>19</sup> The therapist-directed approach aims at controlling the environment so that the intervention is effective at changing behavior. Such therapist-directed approaches include drills and modeling. The child-directed approach, for obstinate and unassertive communicators, focuses on the therapist reacting to the child's behaviors and providing linguistic mapping. Examples of child-directed approach include expansions (i.e., expansion of child's utterances with detail), recasting (i.e., expansion of child's utterance into a different type of sentence) and parallel talk (i.e. productions about child's actions). Hybrid approaches such as focused stimulation facilitate language by exposing the child to multiple repetition of a specific linguistic target within a communicative context.<sup>20</sup>

In addition to oral communication, speech-language pathologists are involved in providing individuals with various means of communication such as sign language, picture cards, assistive technology and communication devices. For individuals with feeding and swallowing concerns, speech-language pathologists provide management techniques as it related to positioning, food presentation, diet consistency, oral/pharyngeal/laryngeal exercises, swallowing maneuvers, and intraoral prosthetic devices for swallowing.

Parent can avail themselves of the services of the few speech and language associations and programs in Nigeria. The Speech Pathology and Audiology Association of Nigeria accredits training programs and ensures ethical standards in the practice of speech pathology and audiology. The Stuttering Association of Nigeria aims at educating people about stuttering and provides a support network for individuals who stutter. The University of Ibadan has an audiology and speech pathology program under their department of special education. Parents and medical and educational professionals should seek out clinics and centers within their locality that service children with speech and language impairments.

### *Suggestions for parents*

Medical and educational professions should advise parents about certain measures to facilitate children's speech and language development. Parents should be advised to provide appropriate oral and dental care by visiting oral care specialists such as dentists and otolaryngologists. Parents should be instructed to have their child's hearing assessed by audiologists to rule out hearing loss. They should be encouraged to facilitate their child's language by doing the following:

**Talking to their child using short sentences during daily activities and modeling appropriate sentences for their child to imitate:** Parents should provide many opportunities for their child to hear and say sounds correctly. They should talk about what they are doing and what their child is doing. Parents should talk during daily activities; while taking their child's bath, dressing their child, making meals, feeding their child, and on outings with their child (e.g., markets, shops). As their child gets older, parents should use longer sentences to communicate with their child. Girolametto et al.<sup>21</sup> used focused stimulation, repetition and modeling on children with receptive and expressive language delays. Results revealed an increase in the children's vocabulary and utterance length. Additionally, Buschmann et al.'s<sup>22</sup> study of children with expressive language delays revealed that parent training on child-directed speech and modeling resulted in an increase in vocabulary, sentence production, morphology and syntax.

**Expanding on what the child says:** For example, when their child says "rice", parents can ask "Do you want rice?" and model "I want rice". Robertson & Weismer's<sup>23</sup> study of 2-year old children with receptive and expressive language delays revealed expansion, recasting, parallel talk, and child-directed speech strategies were effective at increasing the number of single words and word combinations produced by children.

**Labeling and naming objects, actions and people:** Parents should name family members, foods, animals, body parts, clothing items, toys, vehicles, and actions. As parents label objects, they should talk about objects' functions (e.g. "People wear glasses to see."). Parents can also look through albums and name family members and places in pictures. Moller et al.'s<sup>24</sup> study of children with expressive language delays revealed that modeling, labeling and repetition increased the children's language output as it relates to syntax and semantics.

**Reading interesting enjoyable story books aloud to their child:** Parents should be encouraged to reread the books to promote retention of language and development of phonological awareness (i.e., ability to identify and manipulate sounds and words). Kim et al.'s<sup>25</sup> study on six-year-old children's linguistic awareness skills revealed that phonological awareness, orthographic awareness (i.e., ability to form letter patterns), and morphological awareness training were predictors of word reading skills.

**Encouraging their child to retell stories and daily events:** Parent should ask questions to assist their child in retelling stories. Older children should not only retell stories orally, but also in writing. Morrow<sup>26</sup> investigated children's story dictation to determine if oral language improved in children who were asked to frequently retell stories. Results of the study indicated that frequent practice and guidance in story retelling had a positive effect on improving dictation of original stories and oral language complexity.

**Singing, reciting poems and rhyming with their child:** There are numerous books and nursery rhymes that have repetitive words and phrase that offer opportunities to learn sounds and words. Brandt et al.<sup>27</sup> reported that music is essential to learning oral language. Playing outdoor games, puzzles, card game and other games that require turn taking with their child: Board games such as ayo and checkers and hand clapping games are great ways to facilitate speech and language at home. Gibbons et al.'s<sup>28</sup> study on social skills games that require turn taking in children with autism revealed improvement in pragmatic and expressive language skills.

**Encouraging your child to greet and engage in conversation:** Children learn from peers and should be encouraged to socialize. Mashburn et al.'s<sup>29</sup> study of peer expressive language on the development of receptive and expressive language skills indicate that language achievements are positively related to their peer's expressive language abilities.

**Giving full attention to their child when their child is speaking:** Parents should be advised to provide a relaxed slow environment so that their child does not feel pressured to talk and respond. Parents should not speak fast or rush the child to speak. It is important for parents to reduce conversational and lifestyle pressures to improve speech fluency.<sup>30</sup>

**Speaking to their child in a language the parent is fluent in:** According to Roseberry-McKibbin<sup>31</sup> parents should speak to their children in the language that is most comfortable for them. Yip & Matthews<sup>32</sup> study of a Cantonese-English learning child found evidence of transfer from Cantonese to English as the child learned English. Providing a good language model allows children to incorporate the appropriate structures learned from their primary language of exposure into their secondary language.

ASHA<sup>33,34</sup> provides useful suggestions and strategies for parents to use with children who present with communication difficulties. The Stuttering Foundation<sup>35</sup> gives several pieces of advice for parents when stuttering is a concern. Ideally, the strategies should be implemented with the guidance of a speech-language pathologist, however these practical steps can be applied until one is accessible.

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## Conclusion

In most developed countries, speech and language disorders are treated by speech-language pathologists, however, in Nigeria lack of adequate awareness, coupled with the few speech-language pathologists that practice, mitigate against easy access to speech and language services. Medical and educational stakeholders should fashion a pathway for the recruitment and training of speech-language pathologists.

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