

## Speech Therapy and Feeding Issues in Children

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### ABSTRACT

This study explores eating and swallowing disorders in children, commonly known as paediatric dysphagia, as well as the current situation in this medical field.

### INTRODUCTION

Feeding is generally regarded to be the process of any kind of intake with respect to a living being. Eating and drinking, alongside the general gathering of various food stuff, or liquid, chewing or sucking, as well as swallowing falls under this overall domain of active intake. The entire activity of feeding is also generally seen as one of the very first social mode of interaction with an audience that greatly facilitates future endeavors. Amongst all the singular parts of the feeding experience, swallowing is perhaps the most complex one. The human orifice of mouth combines saliva, food, and extrinsic liquids, transporting them into the stomach whilst also keeping the air passage properly regulated.

Dysphagia is generally regarded to be a swallowing disorder whereby the inability of one of this foundational life experiences can result in an extension of even more health problems. Although dysphagia is common both across infants and adults alike, they are perhaps at their most important and concerning in the case of the former.

Pediatric dysphagia has been consolidated as an inherent disorder in various foundational medical literature. This has led to certain groups of infants with specific development, and/or disruptive conditions possessing a higher risk of accruing dysphagia (Duncan, Mitchell, Larson & Rosen, 2018). In spite of these very outlying symptoms, dysphagia is commonly associated with the apparent inability to swallow food by a rule. Like many other infantile disorders, dysphagia must be properly treated within a certain space of time, otherwise of which can result in serious consequences. A general failure to thrive, aspiration pneumonias, gastro esophageal reflux, and the inability to maintain the proper level of nutrition, as well as hydration are all effectively seen as possible fallouts from the disorder in question.

Awareness about the prevalence, as well as the signs and symptoms of dysphagia can result in the treatment of the disease amongst a wide scale of population (Hill, Silverman, Noel & Bartz, 2014). Early detection of the disease can generally result in an altogether less amount of complications that may stem from dysphagia in children. Apart from the aspiration due to his disorder in specific,

retrograde flow of food to the nasal cavity in infants are also one of the noted results. This can effectively result in pretty significant, and critical health damage for the subject (s) in question.

#### [A closer look into the entire process](#)

Generally speaking a normal human being finishes up the intake process across four important stages:

1. Oral Phase: This phase generally consists of receiving the food stuffs in the oral cavity, and transporting the food bolus into the pharynx area.
2. The swallowing reflex is triggered at this very stage.
3. Pharyngeal Phase: In this step, the bolus is transferred through the pharynx.
4. Esophageal Phase: The bolus gradually moves down the esophagus until reaching the stomach.

Amongst young infants and babies, all the phases of in-taking the food described above happen to be involuntary in nature. However, as they proceed through age, the oral phase becomes voluntary, which is demarking the point in age when children are able to masticate solid food by themselves. Safe, and facilitating chewing is reliant upon the sensory registration of the food source in question, and they are coordinated according to various motor, as well as cognitive responses. These tend to get developed with age, and comes through with actual experience of eating food.

Perhaps this is best portrayed if one divides the two different stages of intake in terms of their functions. In the case of young infants one should refer it as the suckling phase,

while “Eating and Drinking Phase” when they are actually able to accomplish the aforementioned tasks. As pointed out the oral phase was involuntary in the former, while completely of volition in the latter. The intake of food materials were of a single consistency, which is fluid during the suckling phase. On the other hand, both solids and fluids were featured in terms of dual consistency during the eating and drinking phase. It is also quite important to note that during the suckling phase, the movement of tongue could only be in a single direction. During the eating and drinking phase, the entire plane of the movement of tongue was essential c multidirectional (Alali, Ballard & Bogaardt, 2016). The last aspect of the difference in the case stated that the suckling movement was generated from the brain stem using a central pattern generator. For effectively biting and chewing, greater cortical input were used to control various kinds of different masticatory movement patterns, and guiding through them.

#### [Feeding and Swallowing Disorders](#)

The disorders that come into play during the entire extent of the processes that go into action of feeding oneself may, or may not feature restriction while swallowing.

One may experience avoidance, and restriction of general food intake either through the refusal of age-appropriate, or developmentally accurate foods and liquids (Garuti et al., 2014). They can also occur due to insufficient levels of foods and liquids being consumed.

Feeding disorders can be divided in terms of the following behaviors:

- The overall disruptive, as well as unsuitable behaviors during mealtime at the level of rampant development time of life.
- The failure to learn, and apply self-feeding skills can also result in a lot of disruption during the development levels of age.
- The failure to use utensils, and various feeding devices according to the age of the subject concerned.
- The overall lessening of the optimal growth period is also considered to be an indicator.
- The overall feeding disorders can have a very real chance of occurring during the infantile age, or for a short terms of time after that. Swallowing dysphagia can occur at almost any point, or phase during the overall feeding process.

As pointed out above, perhaps all the stages mentioned are effectively involuntary in nature during the suckling age. This generally results in the relatively higher incidence of various feeding disorders in infants and children, especially in the case of pediatric dysphagia.

#### Consequences of feeding and swallowing disorders

There quite a few long term consequences that can generally extend from overall feeding, and swallowing disorders on the whole.

- An overall aversion of food.
- The condition known as oral aversion.
- It can lead to aspiration pneumonia, and /or pulmonary being at a compromised status.
- Undernutrition, as well as malnutrition would become a common occurrence, especially in the case of children.

– Dehydration can become all too frequent, and serious in some cases.

– Various kinds of gastrointestinal complications, such as motility disorders, constipation and diarrhea can become all too common.

– It may ultimately lead to an altogether poor weight gain in terms of velocity, as well as other complications that may extend from the same.

– The prevalence of uncontrollable, as well as reflexive regurgitation of food that might be undigested, which may ultimately lead to re-chewing, as well as re-swallowing of the food. This is known as rumination disorder, and can be a direct long term consequence of pediatric dysphagia.

– There can be a rise of need in terms of both enteral, as well as parenteral intervention forms of providing nutrition.

– An altogether negative effect upon the child, including the family at large.

– If the disorder should persist in the adulthood, combined physical, as well as psychological issues can lead to high order of various kinds of illnesses.

#### Prevalence and incidence of feeding and swallowing disorders

For feeding and swallowing disorders specifically, the term “incidence” is generally meant to reflect upon the number of new cases identified exactly within a specified time period. On the other hand, the term “prevalence” might be used to refer to the already existing cases of the disorder in children in a general point in time at present. This would help in sifting away from the new cases from the old ones, and would

effectively provide the researchers with an innate understanding as to whether the frequency is rising or not. It would also help in effectively pointing out to the fact whether the overall increase in cases would require a change in the various strategies, and operations available for recovery, or prevention.

It has been supposed that the incidence value of various feeding and swallowing disorders amongst the children are on the rise with time, especially for infants and children (Gomes Jr et al., 2015). This is despite the fact that the survival, or mortality rates among children are improving in relation to various kinds of medically challenging, and fragile conditions altogether. The rise in various strategies can be attributed to this phenomenon in particular as the mortality rates among the adults who have long been afflicted by these disorders have also improved.

However, the overall consideration, and estimates regarding the incidence, as well as prevalence of various feeding and swallowing disorders are subjected to variation. This disproportional data is often caused due to variability in terms of the pertinent conditions, and circumstances under which a particular population has been sampled. In addition to this, the proper definition of how feeding impairment, and swallowing disorders can be defined tend to vary from place to place. The choice for measurement, as well as the methods for same also possibly has some burgeoning effects of this variable results.

As per the Centers for Disease Control and Prevention (CDC), conducts surveys through interviews every twelve months. On an average, approximately 0.9% of the children, which roughly translates to about 569,000 in

number, are afflicted by some form of feeding, and swallowing disorder within the age group that is between three and seventeen respectively (Cho et al., 2015). National Hospital Discharge Survey of the CDC also claimed that almost 116,000 newborn infants are discharged from hospitals with a diagnosed feeding problem in some shape or form.

The prevalence of this feeding, and swallowing disorder is unusually high amongst children who have some kind of development problem, which may vary between 30% and 80% depending upon the geographical location or region. Oropharyngeal dysphagia is said to be 19% on an overall scale, but in the case for children suffering from cerebral palsy, this figure rises up to 99%, which can be called as a constant. The rate of occurrence is said to increase with the severity in terms of cognitive impairment, as well as denigration in terms of the overall motor function in any case.

One may see that severity of developmental issues, especially with the ones that have very early onset in children signal an almost automatic presence of dysphagia. For instance, the subjects who fall under the Autism Spectrum Disorder (ASD) generally experience a five times increased threat of being afflicted with the disease in question. ARFID rates place the prevalence figure somewhere around 1.5% to 13.8% in individuals of the age group in between eight, and eighteen years of age with an association with gastrointestinal problems present in variety. The dysphagia cases generally points toward a higher incidence toward make subjects, and call also effectively mark the presence with a history

of vomiting, and choking, as well as a pre-existing morbid medical condition.

Oral dysphagia can also be considered in the cases of children having craniofacial disfigurement, which upon a widespread consideration can be anywhere between 33% and 83% respectively (Gadodia et al., 2016). Thus, one can effectively witness that the present of some prior affliction can result in the presence of dysphagia by a rule. These can be specific physical affliction that might affect the proper functioning of food, or liquid intake in children, or they can be mental problems. The latter are generally responsible for more serious cases when almost all known methods of diagnosis, and cure prove to fail upon all bases of coverage. However, as time has passed on, more efforts, and great amount of knowledge have been piled upon with respect to the disorder at hand. This has not only led to an effective recovery strategy and facilitations, but it has also helped a lot people understanding, and being aware of the disease on a widespread, universal scale.

### Signs and Symptoms of dysphagia

Problems with swallowing, and feeding oneself with food can manifest in any, or all of the stages of the child's swallowing phases. This may include preparatory for oral intake, in-transit safety for the food, pharyngeal, and finally, esophageal level altogether. The symptoms, and signs that may point towards any occurrence is often dependent upon the phases when, and what would be the type of disorder to occur. They are also closely associated with respect to the child's age at hand. Their innate developmental value is effective upon their influence over the occurrence of disease

amongst the varying subjects in each, or almost all of these cases.

Back arching is one of the most common indicators. Breathing difficulties during the time of feeding is also one of the core signs, including increase rate of respiration, the changing rate of heart beats known commonly as bradycardia or tachycardia, skin color change due to the presence of cyanosis, and apnea. Coughing, and/or choking during the feeding process have also been noted, especially during or after the swallowing, as well as other indicators reflecting the unwillingness to the feeding process have been noted as being the most common indicators (Garcia & Chambers IV, 2010). The general problems that the subject may face during the feeding process are commonly to be taken into account in order to correctly indicate that there may be a possibility of dysphagia.

### Causes for Dysphagia

The known etiologies with respect to pediatric dysphagia have also been similarly established. The disorder at hand is mainly escalated due to the overall presence of quite a few number of known medical conditions. These conditions are generally complex in nature, and may include heart diseases, pulmonary diseases, gastroesophageal reflux disease, as well as cases as general conditions of elongated time for the emptying of the stomach (Fodstad, McCourt, Minor & Minshawi, 2016). Developmental disability can also be considered as a cause for the disease in question, especially if the onset happens before the age of 22 requiring serious lifelong medical, therapeutic, and residential supports.

The disabilities in question can be both mental, as well as physical in nature. Factors



that may affect the normalized neuromuscular state or coordination can also be considered to be direct causes, including prematurity, low birth weight, hypotonia and hypertonia (Robertson et al., 2018). Dysphagia might also be caused due to genetic disorders like Down Syndrome, Pierre-Robin Sequence, Prader-Willi, and Treacher Collins Syndrome etc. Various kinds of medical side effects after treatment can also factor as causes leading to feeding and swallowing disorders. Neurological disorders that can affect the cognitive abilities, as well as the ones that may severely stunt the movement factor can be featured as direct ones. They can also be induced by long form sensory issues, for instance, the limited availability of food during early years of one's own life can result in this state quite effectively. Other factors ranging from behavioral, as well as socio-economic can also be featured as being important factors for the occurrence of dysphagia, especially amongst infants and children.

Atypical eating, and drinking habits can also result in the significant rise of dysphagia, alongside chronic aspiration, and choking on substances, which are otherwise edible. They can also develop in conjunction with various kinds of sensory disturbances, reaction to situations of stress, as well as pain that remains undetected amongst the subjects (Liu, Vantomme & Bhasin, 2018). All of these can be considered, however, one other factor must also be taken into account. Physical abnormality that may affect the proper physical structures, and features of human beings can also eventually result in severe problems with eating, and swallowing of food substances. These are mainly manifested in various craniofacial

abnormalities, as well as esophageal, and choanal atresia respectively.

### Diagnosis of Dysphagia

It has almost become a common knowledge that any parent should learn to identify that there is a problem with a child during mealtimes. The probable signs might be effective enough to establish that there might be a chance of dysphagia, and a physician should be contacted immediately. The type of physician being referred to may depend upon the severity of signs and symptoms of the subject, which may quite result in different treatment routes. In fact, it can just be a case of improper feeding process, for which a pediatric therapist might suffice.

However in case of specifically dysphagia a series of tests must be established in order to consolidate the proper form of diagnosis. The generally defined area for these tests can encompass the areas of mouth, throat, and the esophagus. One of these that are quite effective amongst contemporary physicians is the Oral-Pharyngeal Video Study in which the child is fed just a spoonful of liquid with barium, as well as small amounts of solid food as well laced with barium. Barium gets prominently featured in order to specifically know what exactly happens when the child in question swallows the food, or tries to do the same (O'horo et al., 2015). This could be done in the presence of some speech language pathologist (SLP), or an occupational therapist (OT) both professions, which generally evaluate these conditions in particular. The exact problems either in the oral, or the pharyngeal area of any human being can be effectively located, and signified.

Fiberoptic Endoscopic Evaluation of Swallowing (FEES) can also be performed in

the presence of speech pathologist, as well as occupational therapist. However, the evaluation process takes place in the presence of an Otolaryngologist, who may place a small camera through the nasal cavity of the child while he/she is still completely awake (O'horo et al., 2015). As the camera is positioned appropriately, extra care might be taken in order to facilitate the intake of various food and liquid substances. The study allows for the expressed study into the functioning of the vocal cords, as well as the larynx during the process to be swallowing. This process is quite safe across all ages for children.

Gastro esophageal Endoscopy is quite similar with a very small camera fitted alongside a light tube, which reaches all the way up to the digestive tract. However, this diagnosis test is almost always done under anesthesia, and abnormalities with regards to the throat, and the digestive tract is effectively analyzed. Biopsies, which are effectively small tissue fragments, can be taken for the purpose of effective analyzation.

The testing stages can also be extended by looking for various kinds of reflux abnormalities through processes, such as pH probes, in conjunction of various kinds of impedance, esophageal, and stomach acidity probes respectively, can be used. The probe in question is a thin acid measuring device that may be placed by a GI specialist when the subject is under anesthesia. The presence of various kinds of refluxes are traced in order to consolidate that reflux has been taking place over time, and are consequently removed only a day after the process.

This process reflects the systematic determination of various aspects in the diagnosis of the disease. A certain, and

effective combination may consolidate the fact that there has been pediatric dysphagia through the careful synthesis, of observations, and deriving results. Once these stages are effectively completed, the patient's treatment stage would start almost immediately in order to help overcome this affliction particularly.

### Treatment for dysphagia

In the case for children, the health and well-being of the child in question might be severely considered as the primary place of focus, especially when it comes to feeding and eating disorders. Certain cultures may have foundational medical concepts, which may not synchronize with the pre-formed beliefs at hand (Sharp et al., 2016). Such contradictions may severely affect the holistic healing processes in complex cases of dysphagia over a certain period of time. For instance, one of the most widely consumed materials in a culture could be significantly affecting the rising state of swallowing disorder in a subject.

However, selection of treatment is generally influenced by the child's age, as well as the combination of cognitive and physical state, which might all affected the state swallowing and feeding problems taken into account (Vogel et al., 2015). Many physicians also take into account that many infants and young children, in addition to many of their older counterparts are affected by severe concomitant intellectual disabilities. These may require severe intervention techniques, which can effectively be influenced by simple verbal and non-verbal instructions. Interventions may also involve a change in the environment, as well as a number of indirect approaches that might be used in

order to reduce the risk involved during the treatment.

Postural, and positioning techniques for treatment can be effectively used despite being consolidated for a long time as a therapeutic treatment essentially. They are mostly concerned with affirming, and confirming the posture of the child during feeding and swallowing of food. These techniques essentially serve as protecting the airways, and aids in the proper transit of food down the right pathways effectively (ChoR et al., 2016). A single posture cannot effectively exert this change specifically, and in case of older children, these propositions tend to differ accordingly. However, the general goal of this feeding mechanism is all about achieving central alignment, and stability of the diaphragm during the feeding process.

Modifications to the overall dietary constituents can also serve as having a significant amount of influence, especially if viscosity, temperature, texture, portion size, and taste can affect the food that is to be swallowed (Gallegos et al., 2017). Typical of these modifications may include thickening of very thin liquids, softening, cutting, and pureeing solid foods. Taste, and temperature is also subjected to change in the case of food, it can also be altered in order to provide additional sensory input at the time of actually swallowing.

Other forms of intervention may also include specially designed equipment, and utensils that would inherently have some positive effects upon the overlaying feeding and swallowing process. Maneuvers can also be practiced, and eventually made to be reflexive over certain periods of time, and are generally concerned about synchronization and strength of body parts

during swallowing (Murry, Carrau & Chan, 2016). Some of these may consist of multiple steps, and might not be appropriate for all age groups due to varying cognitive impairments. These interventions may take shape in effort swallow, tongue hold, Mendelsohn maneuvering, and supraglottic swallow amongst others.

The treatments to the oral-motor area might include stimulation, or actions to the lips, jaws, tongue, pharynx, larynx, and other aspects of the feeding canal. These treatment forms can either range from being active to intrinsically passive. Various kinds of feeding strategies are also implemented depending upon the applicability of cases, including pacing and cue-feeding. Pacing generally involves moderating the intake of various food substances by titrating, and modifying the food intake by dividing the time passing in between bits and swallow (Groher & Crary, 2015). Cue-based feeding is reliant upon specific cues from the infant leading into various passing noticeable factors. These can give a probable psychological edge to what is the reaction happens to be during the feeding of the subject in question. This can generally help in the consolidation of a variety of situations when quality takes a noticeable precedence over quantity that is being fed. This can generally result in the feeding skills of the infant being developed at the pace of their own liking.

Sensory stimulation techniques can also be effective in their function about consolidating treatment either through thermal-tactile, or just tactile stimulation. These can generally start with children having an aversive response at the very beginning of the treatment, and consequently increasing stimulating figure eventually.



Behavioral interventions are mostly concerned in the cases when dysphagia is inherently rooted at psychological conditions (Sheppard, Hochman & Baer, 2014). The continuous, and eventual increase in the various circumstances, which may ultimately lead to the intervening circumstances can result in a positive curve of outlook for patients over time. Other forms of specific physical interventions may also be used in conjunction to this. In most of these cases, prosthetics, and various appliances might be used upon the person concerned. These methods can incrementally result in ease during feeding, and swallowing activities resulting in eventual recovery of one's own optimum state in proper feeding over time.

#### **LITERATURE REVIEW**

The above chapter consolidates various facts about the overall state of dysphagia, and proposes various information that are true for them. This chapter specifically explores this fact, greatly facilitating about the details of dysphagia, as well as where the medical domain currently stands at this particular point in time. It effectively captures various aspects of looking at dysphagia, or just feeding and swallowing disorders. This is because the line between the two terms are often interchangeable in medical forums, wherein the specific difference between both of them always being subjected to change and distort.

Polikaitis & Wesling (1987) is truly one of the foundational researches organized, and pursued in this avenue, which has spread and expanded to a great extent since that point in time. The very first fact that was established in this particular case stated that swallowing

amongst normal adults were comparatively more complex to that of the children. However, they also effectively under full control in direct contrast to that of infants and young children. In the case for children, growth and development mostly created an undercurrent of change that effectively changed from the suckling type competency to the fully realized one as noticed with progressing time. A specific admiration for this kind of maturation was present in almost all of children. This could involve improved cheek, and tongue movement so that bolus formation was more efficient, thickening of food stuffs and mobility of the same, as well as stimulating muscle walls in order to counter for the vela-pharyngeal insufficiency. Other development considerations might include palatal older prosthesis, ability to produce music and rhythm, ability to actually enjoy when things are present in the mouth, as well as ability to use tooth massage and brushing. These factors may be included over time as an innate part of the developing process in children, and might feature as an important addition in order to mature the oral movements and application.

Kakodkar & Schroeder (2013) found that the incidence of various feeding and swallowing disorders are rising with time. This is especially pronounced in the case for infants, and young children whereupon the overall medical foundations have already stated to the high risk of medical conditions developing in this stage of life. The normal swallowing is generally divided into four distinct phases, namely preparatory, oral, pharyngeal and esophageal. Feeding disorders can stem from multiple causes, including medical, nutritional, behavioral, psychological and environmental. Symptoms of dysphagia can also come into

being in terms of intolerance in feeding through due to pathological conditions arising in one of the four phases of swallowing. This can ultimately lead to some serious negative impacts over the anatomical parts that are intrinsic to the entire process of the same.

They also established that infancy was marked by unparalleled developments in terms of both cognition, as well as physical during this age specifically. However, this state of affairs is coordinated both in terms of the growth, and the pertinent health condition being discussed in this case specifically. Children would experience growth, and development by having their proper dietary, and nutrient concerns satisfied. However, this could only be made possible if the child in question does not experience any kind of significant swallowing or feeding disorder of any kind. As a result, it is quite important to maintain all possible kinds of pediatric concerns to properly identify, and manage the pediatric feeding conditions altogether. This effectively provides a great idea of properly analyzing dysphagia in children, and common causes of childhood dysphagia as a health disorder, populations at risk, assessment techniques available in looking for children afflicted with dysphagia, and the current treatment options available for infants and children in general. They observed that the condition may occur in both children and adults. Certain groups of infants, and young children have a consequently higher incidence of being afflicted by the disorder have some sort of development and/or medical conditions. But, many of them also tend to have the swallowing and feeding problems as their primary form of affliction. If left untreated, this condition may lead to disruption in terms

of development, failure to thrive as beings properly, aspiration pneumonia, gastroesophageal reflux, as well as the chronic inability to maintain proper form of nutrition and hydration.

Therefore, awareness about the prevalence, and any instance of occurrence can have a positive impact by leading to proper treatment and recovery. Early onset, and detection of dysphagia in children can facilitate in a great form of their detection, and eventual treatment. Proper development and consolidation of symptoms, etiologies, and treatment options for dysphagia can effectively lead to the eventual recovery in many of the cases, as well as the overall decrease in the prevalence of the disease.

(Kakodkar, Schroeder Jr & Holinger, 2012) claim that Pediatric Dysphagia can manifest at birth, persist throughout the developmental age of childhood, and can even persist until maturity if they are left untreated. The disorder is one of the most commonly occurring, yet one of the least understood afflictions throughout. They argue that the major cause for pediatric dysphagia can be attributed to altered hindbrain patterns at the time of pre-natal development. The changes in those features can significantly alter the craniofacial structures, including pharyngeal muscles, as well as the skeleton elements. This may, in turn, greatly affect the motor and sensory circuits of the nervous system, which may greatly affect both swallowing and feeding process. Mechanistic insights into the pathogenic conditions of feeding and swallowing could be effectively measured by analyzing the animal models for feeding and swallowing disorders. Disgorge/22q11.2 Deletion Syndrome (22q11DS) happens to be a quite common genetic disorder that can

lead to an altogether higher incidence of pediatric dysphagia in the phenotypic spectrum. Most infant mice carrying the condition 22q11DS all had some form of swallowing and feeding difficulties. Altered patterns upon the hindbrain, craniofacial disfigurement, natural crest migration, and the general state of stunted growth of the nervous system can quite easily contribute towards this state of circumstances. The highlighted mechanisms that effectively chart, and track the overall state of alteration of hindbrain patterning, as well as circuitry can prove to be foundational to the clinical treatment to the general condition of pediatric dysphagia.

Sheppard and Malandraki (2015) also carefully studied the disorder to confirm that feeding and swallowing disorders were most prevalent in children. This figure has kept increasing with time, and are often associated with multiple forms of complex development, and medical conditions. For proper evaluation, and the quick initiation of treatment methods a multidisciplinary approach was needed. After providing a brief description of what correctly feeding and swallowing disorders entailed, this article offers explicitly important data with regards to the data upon epidemiology of dysphagia, as well as essential diagnostics, impact, evaluation, and treatment of the condition, especially regarding pediatric conditions.

The connection between dysphagia and Cerebral Palsy was established by Benfer et al. (2017) and found that progression of feeding and swallowing disorders were most commonly present in pre-school aged children suffering from symptoms of cerebral palsy. In most of these cases, there were disruptions to the overall motor functions involved. The authors

hypothesized that children at 60 months regarding age had a lesser prevalence of dysphagia as compared to the ones at 18 to 24 months (yehé & Shaker, 2015). The disease (OPD) was classified with the help of Dysphagia Disorder Survey Part 2, and rating was assigned through video with the help from a pediatric speech pathologist. GMFCS was used to identify and classify the various gross motor functions effectively, and the prevalence of the disease was reduced from 79.7% at 18 to 24 months to a low 43.5% at the 60 months of age respectively.

Dodrill and Gosa (2015) worked their way through the foundations about the prevalence of feeding and swallowing disorders in children. The overall hallmarks of these specific age groups in children were marked by unparalleled growth both regarding mental, as well as physical conditions through the proper intake of essential nutrients, as well as ingredients. Swallowing difficulties, particularly dysphagia, can generally disrupt the linear progress of both direct physical and psychological development. The article primarily focused upon the imperative assessment of the populations at risk, the most common causes, assessment of the various problems with swallowing instances in children, as well as the overall conditions that may facilitate proper treatment.

Bhattacharyya (2015) also established the critical fact that feeding and swallowing disorders in children were becoming all the more common, and tried to determine the proper reason for the same. Feeding disorders can have multiple causes that may range anywhere from medical and behavioral to psychosocial, as well as environmental. One of the most common of these included

pathological conditions plaguing the anatomic sites whereupon problems in any of the swallowing phases can lead to possible negative influences of proper coordination, and management of food swallowing leading to the eventual establishment of the disorder at hand.

Arora (2018) observed that the pertinent condition of dysphagia occurring mostly among children could lead to some severe consequences. One of these consequences generally implicates that the proper management of these disorders can lead to stunted development due to persisting disruptions about intake of proper nutrients that are so instrumental for proper progression regarding human growth. The other major social problems may also be risen out of the persistence of this condition specifically due to the infant suffering from dysphagia not having a proper connection with the caregivers at all. This state of affairs can regress the situation in the infants to an even greater degree than before.

Jadcherla (2016) found that neonatal dysphagia is mostly occurring in infants, and young adults is a major global health issue, which has the potential to affect entire populations in an increasingly pandemic way. Since growth, development, and independent feeding, and swallowing skills are severely affected, it could result in some pretty severe consequences for the entire human civilization going forward. The appropriate conditions that may lead from this early birth conditions, low infant weight, anomalies related to congenital conditions, prenatal asphyxia, as well as postsurgical and sepsis complications. The conflict between the physiological treatment path, and the strategies of pathological treatment due to a giant vacuum regarding properly validated

diagnosis approaches, as well as different circumstances about the patient phenotype. Therefore, well-established feeding strategies are generally lacking on a general basis. The overall aero-digestive symptoms, proper risk factors, and the continued sense of established are either lean regarding specificity, as well as widespread knowledge. This article, as a result, provides mechanistic opportunities to establish a physiological basis for neonatal dysphagia, while also creating potentially better feeding abilities, and development based upon long form basis. Additionally, symptoms of feeding difficulties were more or less heterogeneous whereby they could either be rooted at airway or digestive faculties. Recent developments in technology, as well as the available methods, propositioned a much more significant headway into the original roots of the disease, as well as the path physiological discoveries being made into individually solving the various feeding difficulties. As a result, better diagnostic, and monitoring specializations were able to be confirmed as a part of the whole medical process about dysphagia at large. The approach towards managing the disorder was rooted in the overall primary and secondary symptoms, in addition to feeding and growth curve, dysfunctional systems and organs present if any, as well as the distinctive correlation between clinical and pathological discoveries at hand. These approaches basically could form the very foundational basis of the therapies in question. The major takeaways from this piece of literature were many, including the widespread disruption in the aero-digestive tracts, path physiological concerns, and the overall importance of proper monitoring, and diagnostic oversight.

Santhosh (2017) tried its hand at correctly observing natural circumstances of feeding

and swallowing to determine whether any child did have the disorder. This document essentially attempted to establish the fact if standard observations and their extenuating inquiries could be made in any possible case for pediatric dysphagia. It essentially tried to differentiate between the various forms of feeding disorders that were most prevalent. This tied to the different feeding phases in any particular human physiognomy. It was established that if an infant had feeding disorder, then that meant it would mostly be concentrated upon their chewing and suckling acumen, whereas dysphagia strictly was concerned with the inability to properly swallow the food down the food pipe beginning from the pharyngeal phase specially.

Van Den Engel-Hoek, De Groot, De Swart, & Erasmus (2015) observed that feeding and swallowing disorders in children severely affected children regarding both their growth, as well as the overall state of well-being in life. The innate aim of this study was to provide an overview upon the various effects of feeding and swallowing disorders in children suffering from neuromuscular diseases, based upon extended information and opinions from experts, as well as provide recommendations for the proper assessment and treatment. The specific pediatric neuromuscular disorders are perhaps all accompanied by problems about swallowing, often manifesting as threatening and concerning signs and symptoms, which better requires some definitive consultation from speech and language therapists. American Speech-Language-Hearing Therapists, in 2007, deemed “feeding and swallowing disorders” as a greater inclusion regarding phrase definition altogether with respect feeding and swallowing disorders, particularly dysphagia. Feeding disorders

were eventually featured as being connected to problems stemming from various eating activities, including sucking during breastfeeding or bottle drinking among babies, or eating with a spoon, chewing, in addition to drinking from a cup.

Regarding adequately dealing with the “management of dysphagia”, Arvedson (1998) viewed that optimal management strategies were required to be developed, and implemented amongst children and infants with severe feeding and swallowing problems. Management decisions were best developed through a natural collective process whereupon caregivers would team up with educational and medical professionals would work towards maximizing the nutritional value intake in children within a safe, and efficient system as a whole. These management decisions should be based on clinical observation, and the assessments that could stem from it. One of the examples, when the evaluation would be completed, was when proper pharyngeal phase functionalities were defined. In addition to this, useful histories regarding feeding developmental, and health conditions would also be required as establishing by the parties concerned. To this end, the video fluoroscopic scope study (VFSS) was generally considered to be the most appropriate, and capable of all the observational and assessment methods. Findings from the VFSS tests are often confirmatory to clinical approaches, while in other cases, they contradict entirely the same. However, one should always consider that clinical criteria do not always yield appropriate result as quickly as one might expect them to do so. The article also confirmed the fact that some “food rules” would have to be confirmed to effectively manage the various kinds of strategies



entailing to these kinds of considerations as a whole. It may also include position and posture changes, alteration in the solid or liquid content, oral-motor as well as full-fledged swallow function in order amongst other accessory changes to properly bring about this change towards an intrinsically positive curve. Adjustments to scheduling and pacing, as well as behavioral intervention, can also bring about this change in infants and children.

Bhattacharya (2014) also confirmed this intrinsic team approach to feeding and swallowing management. The speech-language pathologist (SLP) can play an effective role to this very end, facilitating in the development of realistic goals in both short, as well as long term. Before intervention regarding both feeding and swallowing disorders, some prerequisites are needed to be established regarding interventions. These prerequisites are mostly concerned about the several medical conditions, which might affect the children, and infants suffering from these conditions exactly. Through this article, Bestler (2014) also established that the overall considerations of swallowing and feeding disorders might entail more than just regarding clinical feeding procedures. In addition to the primary medical condition of the child itself, various other etiological, and developmental processes are required to be appropriately established. To facilitate this change, proper holistic measures are to be taken to perpetuate and bring about this state of circumstance.

Arvedson (2008) observed the various roles, and infrastructure utilized in the case for the establishment of proper assessment and diagnostic skills at large employed to this very end. For instance, it proposes the

utilization of various ultrasonic techniques that might be used to facilitate, and bring about this change. It also focuses upon future facilities that might be used in conjunction with this very end.

## DISCUSSION

The plan for the proper provision of a possible new way forward to manage dysphagia as a whole was brought about by stringently following the standards that are most prevalent during this period in time. It brought about the specifics regarding actually bringing about a noticeable change amongst young children and infants. It is essential to consider all the various etiological, as well as clinical data related to dysphagia. This plan has been developed directly by effectively being inspired by this facilitation particularly. As a result, the approach to this overall plan would have to be holistic in its approach both regarding the appropriate medical conditions that could be present in any subject, as well as the surrounding state of the environment in question.

## Plan of Work and Methodology

### Data collection

**a. Study Setting:** A questionnaire was developed to accurately assess whereupon feeding and swallowing problems amongst young children that could have some connection.

**b. Selection of samples:** Children between three and six years of age were selected as they noticeably had the highest prevalence of this disorder.

### c. Preliminary Information

- Primary caregivers were parents, educators and hired caregivers by families.
- A medical team of pediatricians, speech-language pathologists, and educational professionals who had explicitly pursued in this line of research.
- Ancillary care team of nurses were also present to provide secondary care as and when needed.
- The children were kept under strict observation.
- Their medical histories were drawn up for each respective cases.
- The child was provided with all possible medical aid, and resources so that no possible problems would have to be encountered during the research process.
- Allergies and intolerances apart from the ones generally stemming from the disorder at hand were established effectively and in full range. This would prove to be instrumental while providing useful substances, and while conducting tests during the research at hand.
- Children observation during the tests were strictly observational.
- APGAR Scores observed was 7/10 @1m, 10/10@ 5m, 10/10@10m respectively.
- Apparent Congenital malformations, deformations, and chromosomal abnormalities were noted if there were any.
- Apparent Conditions/Disorders/Diseases of the nervous system Details were also considered especially.
- Apparent Conditions/Disorders/Diseases of the circulatory system were highlighted in each of the cases if there had been any.
- Apparent Conditions/Disorders/Diseases of the respiratory system were also considered and observed as and when necessary.
- Apparent Conditions/Disorders/Diseases of the digestive system were detailed regarding whether they had some connection with the disorder or not.
- Apparent Conditions/Disorders/Diseases of the musculoskeletal system and connective tissue were also noted since they always were connected to feeding and swallowing disorders.
- Mental, behavioral, and neuro developmental disorders were noticed.
- Injury, consequences of external causes, and poisoning were observed
- Apparent Hearing impairment was observed
- Apparent Visual impairment was observed

#### **d. Birth History**

- Complications during pregnancy were effectively taken into account when and where they would be necessary.
- Delivery history of each child was observed quite carefully. Consideration whether the process had been vaginal or Caesarian, single or multiple, or whether they involved some particular interventions during the process.
- Birth weight of the children was noted.

### **e. Swallowing/Feeding & Nutrition Assessment History**

- Whether the child had been appropriately breastfed, and also after this stage, what exactly had the transition been, whether bottle feeding or spoon feeding, were noted.
- History of Dehydration, Poor Weight Gain, Gagging/vomiting during or after drinking and Pain/discomfort during or after eating/drinking was observed.

#### **Information Evaluation**

- Average number of feeding was about five to seven during the assigned time with their lengths being approximately 10 minutes
- Mothers were used to feeding in the cases for infantile considerations
- Volume intake was observed was 80 to 90 ml of milk per feeding, and a total of approximately 700 to 800 ml of milk of liquid
- Additives and supplements were utilised when and where they were needed

#### **Before assessment**

- The overall state of most of the subjects was deemed uncomfortable to slightly comfortable depending upon the age.
- Respiratory Rate was higher in many of the cases.
- Oxygen saturation was also noticed to be unnaturally high.
- Moderate Pain was observed in most of the cases indicating the significant presence of feeding and swallowing disorders.

- Signs of stress during assessment were observed possibly due to the children being not precisely familiar with the changing environment during the feeding process.
- Oral Feeding, while sitting and eating, took approximately 15 minutes to complete on a broad average.
- Supplements and vegetables that were deemed healthy were utilized in spades.
- The children were fed by experienced caregivers.
- Sucking/Drinking skills were not appropriate in many of the cases, and they were noted down as and when necessary.
- Compensatory strategies were trailed by giving some sweets, as well as appropriate toys according to age. Results were mixed, however.

#### **Clinical Summary**

- Patient name or demographic data were kept confidential as per the requirement of the research at hand.
- Prognosis for safe oral intake was followed according to the established models of consideration.
- Prognosis for adequate oral intake could only be possible by a proper plan for meals.
- Children were either uncomfortable due to pain or were feeling afraid, or indecisive during the feeding process.

### Plan of care:

- Speech therapy intervention was recommended for ten times /week for 30minutes or as tolerated Interventions include but were not limited to the following:
- Long term goals were set that speech must be satisfied according to baseline considerations.
- Short term goals were set to keep the children comfortable and should start conversational activities.
- Education was provided to the family regarding results, recommendations and the plan, as indicated in table 1.

(See Table 1.)

Parents most certainly require guidelines and directions during the feeding process to correctly solve difficulties as and when needed. Healthcare professionals, as a result, must come up with an effective formula to this end and would deliver these directives through systematic assessment, and proper management of feeding difficulties in a primary care setting. The classification, in this case, is brought to three factors, namely concerns presented by parents themselves, organic and behavioral subcategories of each subject group, and the valuation of some feeding styles. This would allow the professionals to tailor a specific approach that may provide a solution to each of these cases.

### Ethical Issue

The study was conducted strictly following the university guidelines.

### Research Philosophy

Empirical data was collected as and when needed to accurately define, and measure the scope of the problem at hand, and extra care was taken into account at every possible turn.

### Challenges in Research

Different type of threats can occur during any stage within the research process that can compromise validity to study.

Taking Consent or permission from parents was a tedious task and also taking NOC from the related department, and University was another difficult task. As we had to treat children suffering from **Pediatric Dysphagia**, we had to convince and create trust among children so that they can have patience and contribute to Research.

### Data Collection

Data was collected from a multitude of various sources. Requirements were communicated by analysts to specific custodians of data in a clear and transparent way, such as information technology personnel within an organization. Information was also be obtained through interviews, online sources, and essential readings.

Primary data were collected through Observation, Clinical trials, and Discussion with parents and children.

For the study, secondary data were collected from Articles and papers published in different journals, magazines, newspaper, periodicals were studied, and data available on the internet and other sources were also used.

## CONCLUSION

As one might see quite effectively, dysphagia generally entails a lot of problems for the infants and young children, leading to severe limitations to their growth and well-being. To properly analyze, and develop active treatment facilities, there needs to be a specific holistic approach that should be implemented.

Doing so would not only mean that the effectiveness of all interventions might experience a more significant amount of success, but it would also entail that all possible threats are eliminated effectively altogether. Now, the overall consideration of the diagnosis of dysphagia might be intrinsically related to finding the actual cause for the feeding or swallowing disorder concerned. This is because the entire scope of the functions and processes concerning the overall state of any child suffering from the disorder would require some specific treatment facilities. This generally implies that the overall concern about the question of what treatment facilities, activities and allocations of technologies would follow a pattern that is effective without causing any outlaying problems. It also implies that proper personnel should be assigned in order to treat children suffering from the disorder at hand.

A Speech and Swallowing Therapist is perfect for this job role, and it generally implies that certain insights lie with these experts who have an innate knowledge into the specific body parts that concern dysphagia, especially in the pharyngeal and esophageal parts respectively. However, there should be effective allocation in terms of support staff who may quite successfully observe, and arrive at specific conclusions

toward any particular case. These cases can stem from in-born skeleto-muscular conditions, inappropriate feeding practices, early onset of malnutrition, and also some embedded mental conditions. Identifying, and solving these problems with a holistic approach is what closely ties with the appropriate treatment, and reduction of prevalence in dysphagia across the entire scope of global child populations.

## REFERENCES

- Alali, D., Ballard, K., & Bogaardt, H. (2016). Treatment effects for dysphagia in adults with multiple sclerosis: a systematic review. *Dysphagia*, 31(5), 610-618.
- Arvedson, J. C. (1998). Management of pediatric dysphagia. *Otolaryngologic Clinics of North America*, 31(3), 453–476. [https://doi.org/10.1016/S0030-6665\(05\)70064-5](https://doi.org/10.1016/S0030-6665(05)70064-5)
- Arvedson, J. C. (2008). Assessment of pediatric dysphagia and feeding disorders: Clinical and instrumental approaches. *Developmental Disabilities Research Reviews*, 14(2), 118–127. <https://doi.org/10.1002/ddrr.17>
- Bestler, C. (2014). Pediatric Feeding Disorders and Intervention. *Southern Illinois University Carbondale Research Papers*, 471, e1-e24. Retrieved from <https://core.ac.uk/download/pdf/60569007.pdf>
- Bhattacharyya, N. (2015). The prevalence of pediatric voice and swallowing



- problems in the United States. *The Laryngoscope*, 125(3), 746-750.
- Bremare, A., Rapin, A., Veber, B., Beuret-Blanquart, F., & Verin, E. (2016). Swallowing disorders in severe brain injury In the arousal phase. *Dysphagia*, 31(4), 511-520.
- Cho, S. Y., Choung, R. S., Saito, Y. A., Schleck, C. D., Zinsmeister, A. R., Locke III, G. R., & Talley, N. J. (2015). Prevalence and risk factors for dysphagia: a USA community study. *Neurogastroenterology & Motility*, 27(2), 212-219.
- Clavé, P., & Shaker, R. (2015). Dysphagia: current reality and scope of the problem. *Nature Reviews Gastroenterology & Hepatology*, 12(5), 259.
- Duncan, D. R., Mitchell, P. D., Larson, K., & Rosen, R. L. (2018). Presenting signs and symptoms do not predict aspiration risk in children. *The Journal of paediatrics*, 201, 141-146.
- Fodstad, J. C., McCourt, S., Minor, L. R., & Minshawi, N. F. (2016). Feeding Disorders. In *Comorbid Conditions Among Children with Autism Spectrum Disorders* (pp. 187-216). Springer, Cham.
- Gadodia, G., Rizk, N., Camp, D., Bryant, K., Zimmerman, S., Brasher, C., ... & Lugtu, J. (2016). Presenting symptoms and dysphagia screen predict outcome in mild and rapidly improving acute ischemic stroke patients. *Journal of Stroke and Cerebrovascular Diseases*, 25(12), 2876-2881.
- Gallegos, C., Brito-de la Fuente, E., Clavé, P., Costa, A., & Assegehegn, G. (2017). Nutritional aspects of dysphagia management. In *Advances in food and nutrition research*, 81, 271-318. Academic Press.
- Garcia, J. M., & Chambers IV, E. (2010). Managing dysphagia through diet modifications. *AJN: The American Journal of Nursing*, 110(11), 26-33.
- Garuti, G., Reverberi, C., Briganti, A., Massobrio, M., Lombardi, F., & Lusuardi, M. (2014). Swallowing disorders in tracheostomised patients: a multidisciplinary/multiprofessional approach in decannulation protocols. *Multidisciplinary respiratory medicine*, 9(1), 36.
- Gomes Jr, C. A., Andriolo, R. B., Bennett, C., Lustosa, S. A., Matos, D., Waisberg, D. R., & Waisberg, J. (2015). Percutaneous endoscopic gastrostomy versus nasogastric tube feeding for adults with swallowing disturbances. *Cochrane database of systematic reviews*, (5).
- Groher, M. E., & Crary, M. A. (2015). *Dysphagia: clinical management in adults and children*. Elsevier Health Sciences.
- Hill, G., Silverman, A., Noel, R., & Bartz, P. J. (2014). Feeding dysfunction in single ventricle patients with a feeding disorder. *Congenital heart disease*, 9(1), 26-29.
- Jadcherla, S. (2016). Dysphagia in the high-risk infant: Potential factors and mechanisms. *American Journal of Clinical Nutrition*, 103(2), 622S-

- 628S.  
<https://doi.org/10.3945/ajcn.115.110106>
- Kakodkar, K. A., Schroeder Jr, J. W., & Holinger, L. D. (2012). Laryngeal development and anatomy. In *Pediatric Airway Surgery* (Vol. 73, pp. 1-11). Karger Publishers.
- Kakodkar, K., & Schroeder, J. W. (2013). Pediatric Dysphagia. *Pediatric Clinics of North America*, 60(4), 969–977. <https://doi.org/10.1016/j.pcl.2013.04.010>
- Liu, E. Y., Vantomme, E., & Bhasin, S. (2018). A51 Rare Causes of Dysphagia: A Case Series. *Journal of the Canadian Association of Gastroenterology*, 1(suppl\_2), 82-83.
- Murry, T., Carrau, R. L., & Chan, K. (2016). *Clinical management of swallowing disorders*. Plural Publishing.
- Naser, S. S. A., & Alawar, M. W. (2016). An expert system for feeding problems in infants and children. *International Journal of Medicine Research*, 1(2), 79-82.
- O'horo, J. C., Rogus-Pulia, N., Garcia-Arguello, L., Robbins, J., & Safdar, N. (2015). Bedside diagnosis of dysphagia: a systematic review. *Journal of hospital medicine*, 10(4), 256-265.
- Robertson, J., Chadwick, D., Baines, S., Emerson, E., & Hatton, C. (2018). People with intellectual disabilities and dysphagia. *Disability and rehabilitation*, 40(11), 1345-1360.
- Sharp, W. G., Stubbs, K. H., Adams, H., Wells, B. M., Lesack, R. S., Criado, K. K., ... & Scahill, L. D. (2016). Intensive, Manual-based intervention for pediatric feeding disorders: results from a randomised pilot trial. *Journal of pediatric gastroenterology and nutrition*, 62(4), 658-663.
- Sheppard, J. J., Hochman, R., & Baer, C. (2014). The dysphagia disorder survey: validation of an assessment for swallowing and feeding function in developmental disability. *Research in developmental disabilities*, 35(5), 929-942.
- Van den Engel-Hoek, L., de Groot, I. J., de Swart, B. J., & Erasmus, C. E. (2015). Feeding and swallowing disorders in pediatric neuromuscular diseases: An Overview. *Journal of neuromuscular diseases*, 2(4), 357-369.
- Vogel, A. P., Keage, M. J., Johansson, K., & Schalling, E. (2015). Treatment for dysphagia (swallowing difficulties) in hereditary ataxia. *Cochrane Database of Systematic Reviews*, (11).
- Yeh, H. (2018). Swallowing exercise for upper oesophageal sphincter dysfunction in a stroke patient with dysphagia: A systematic review. *Annals of Physical and Rehabilitation Medicine*, 61, e381-e382.

## APPENDIX

Table 1.

### *Components of Mealtime Structure*

Component	Considerations
General environment	Level of distraction available from people was kept at a bare minimum with auditory, visual, and other aesthetic stimulations present
Seating	Each child's feet were flat, hips were flexed at 90-degree angle, trunk was supported, and head was in neutral or slightly flexed position
Antecedents	Proper considerations were taken into account with regards to the various considerations regarding the type and texture of food, the utensils and equipment utilized, as well as the type of liquid to be fed in conjunction during mealtime.
Food Presentation	Feeder circumstances would be determined with time according to the self-feeding or otherwise, in addition to instructions that are specific to a case, the order of the foods and drinks. Finally, the utensils that may enter the child's mouth to facilitate, and develop oral-motor skills in a subject.
Next Bite or Drink	Only after the child has completely swallowed the offering in any instance, would the next bite or drink would be offered.
Criteria to Terminate Meal	Proper child behaviors, the amount of food and liquid consumed, and finally, the time of consumption shall all play a role in the determination of the complete meal in any instance.