



Children With Orthopedic Disability

Beyhan ŞATIR*^a - Sevgi ÖZCAN**

Article Info

Article History:

Received: 12 Oct. 2021
Accepted: 09 Jan. 2022
Published: 22 Feb. 2022

Keywords:

Orthopedic Disability,
Special Education, Education

Article Type:
ORIGINAL

Abstract

Individuals with orthopedic disability are defined as “individuals who cannot benefit from normal education and training activities adequately due to disabilities in the skeletal, nervous system, muscles and joints despite all corrections”. It is seen that there are children with orthopedic disabilities at all education levels and, accordingly, teachers have some difficulties in the education of these children. For this reason, in this study, the current literature on children with orthopedic disability is examined, and the definition of children with orthopedic disability, the causes, classification, types of this disability, and the difficulties that children with this disability may experience are mentioned. In addition, recommendations were made for parents of children with orthopedic disabilities. Finally, some studies on children with orthopedic disabilities are mentioned.

*^a **Corresponding Author:** MEB, Eryaman Başak Anaokulu Etimesgut/Ankara, e-mail: eryamanbasakanaokulu@gmail.com
ORCID: 0000-0003-4882-3877

** MEB, Türkkonut Anaokulu Etimesgut/Ankara, e-mail: sevgiozcan2010@hotmail.com ORCID: 0000-0002-2524-6723

Introduction

Teachers, teach people with very different characteristics, including children with special needs. However, special need is not always a cognitive limitation. Sometimes children, especially those with orthopedic disabilities, experience some limitations based on their physical abilities (LaRose, Thoron, & Colclasure, 2016). The Ministry of National Education (Milli Eğitim Bakanlığı) (MEB) (2016a, p.7) defines individuals with orthopedic disability as “individuals who cannot benefit from normal education and training activities adequately due to their skeletal, nervous system, muscle and joint disabilities despite all corrections”.

These deficiencies may occur due to reasons before, during or after birth. Chromosomal disorders, hereditary causes, metabolic disorders, brain developmental disorders, maternal age, nutrition during pregnancy, drugs used during pregnancy, drinking, smoking, drug use, exposure to radiation, traumas and diseases during pregnancy are some environmental factors and prenatal causes. can be listed as Although it is not very common, oxygen deficiency in the baby and permanent brain damage and insufficiency may occur due to reasons such as head traumas that may develop during birth , umbilical cord problems, and prolonged birth. In addition to these, early, risky and difficult births, doctors and hygiene problems in the birth environment can be expressed as the reasons that develop during birth. Infectious diseases that may develop in childhood such as meningitis , tumors, head traumas, exposure to abuse, physical violence or intense toxic substances, malnutrition, mental traumas, natural disasters, wars, inadequate environmental conditions can be counted among postnatal causes (Elibol, 2018).

Another grouping related to the causes of orthopedic insufficiency is as follows (Child Raise) (Trust, 2020):

- Congenital: Deficiencies present in a child from birth. Spina Bifida, crooked feet, dislocated joints are examples of this. It can be divided into three:
- Hereditary: Conditions passed down from parent to child.
- Developmental: Embryological defects in the fetus.
- Birth period: Abnormalities occurring before or during birth
- Acquired: It is the deficiencies that develop later in a normal born child due to accidents, injuries and infections.

According to the Individuals with Disabilities Education Act of the United States, a severe orthopedic disability adversely affects a child's educational performance and may cause disabilities caused by a congenital anomaly (such as clubfoot, lack of an organ), disabilities caused by disease (such as polio, bone tuberculosis). and other causes (cerebral palsy, amputations, and convulsive fractures or burns) (Heward, 2013; LaRose, Thoron, & Colclasure, 2016). Although the term orthopedic disability is used in the law, it is possible for children with physical disabilities to have orthopedic disabilities or neuromotor disorders. An orthopedic disability is related to the skeletal system, namely bones, joints and muscles. A neuromotor disorder is related to the central nervous system, which affects the ability to move, use, feel or control certain parts of the body (Heward, 2013). Although orthopedic and neuromotor disorders are two different types of disability, they can cause similar limitations in movement. Therefore, similar educational, therapeutic and recreational activities may be suitable for children with both orthopedic disabilities and neuromotor disorders (Best, Heller, & Bigge, 2010). In addition, there is a close relationship between these two conditions that can be explained as follows: A child who cannot move his legs due to damage to the central nervous system, that is, with a neuromotor disorder, may experience orthopedic deficiencies in the leg muscles and bones, especially if he cannot receive appropriate treatment and hardware support (Heward, 2008). 2013).

Kobal (2005) stated that orthopedic deficiencies are classified into 3 groups according to their degree:

- Mild disability: These are the situations where the person with a disability is able to meet his individual needs independently, can continue his daily life without the need for support, can improve his motor and perception skills with treatment and education, but these skills are likely to regress in the absence of intervention.
- Moderate disability: The person with disability can be independent from time to time to continue his daily life, but sometimes needs support, has deformities in his joints that limit his movement, uses tools such as

crutches to meet his individual needs, and affects the academic success or development of motor skills negatively. cases of perceptual disturbances.

- Severe disability: Conditions in which the person with disability is fully dependent on meeting his individual needs in his daily life, has poor head control, is dependent on a wheelchair, has deformities and pains that limit his movement, and has sensory-perception disorders that negatively affect school success or the development of motor skills. .

It is possible to classify orthopedic deficiencies in three different categories (as cited in LaRose, Thoron, & Colclasure, 2016):

- Neuromotor disorders : Spina bifida, cerebral palsy, spinal cord injuries
- Degenerative diseases: muscular dystrophy, spinal muscular atrophy
- Musculoskeletal disorders: clubfoot, missing/deformed limbs, scoliosis

Kobal (2005), on the other hand, divided orthopedic deficiencies into deficiencies related to the nervous system and deficiencies related to the musculoskeletal system:

- Deficiencies related to the nervous system: Cerebral Palsy, Spina Bifida, Spinal Cord Injury, Multiple Sclerosis (MS), Polio, Traumatic Brain Injuries, Rett Syndrome.
- Musculoskeletal deficiencies: Muscular Disease (Muscular Dystrophy), Arm-Leg Deficiency, Hip Dislocation, Congenital Deformity, Rheumatoid Arthritis, Rheumatic Fever

Some of these deficiencies are described below.

Deficiencies related to the nervous system

Cerebral palsy . Cerebral palsy is a group of movement and posture disorders resulting from an injury or anomaly of the developing central nervous system , in other words, a lesion in the brain or an abnormality of brain growth (Heward, 2013; The Center for Children with Special Needs Seattle Children's Hospital, 2011). Various diseases can cause cerebral palsy by affecting the developing brain (Batshaw, Pellegrino, & Roizen, 2007; cited in Heward, 2013). Children with cerebral palsy experience voluntary motor dysfunctions that can include paralysis, extreme weakness, lack of coordination, involuntary contractions, and other motor disturbances. Depending on the type and degree of the disorder, they may have little or no control of their arms, legs, or speech (The Center for Children with Special Needs Seattle Children's Hospital, 2011). While the characteristics of cerebral palsy change with developmental stages, especially in the first few years of life (The Center for Children with Special Needs Seattle Children's Hospital, 2011), motor dysfunction is not usually a condition that worsens as the child gets older (Heward, 2013). Cerebral palsy can be treated, but not completely cured. This condition is not a disease, it is not fatal, it is not contagious, and in the vast majority of cases it is not hereditary, but it is permanent (Heward, 2013; The Center for Children with Special Needs Seattle Children's Hospital, 2011). With early and ongoing treatment, the effects of cerebral palsy can be reduced, and many children learn to work their bodies in different ways . Parent Information and Resources, 2017).

In the last 20 years, the birth incidence of cerebral palsy has remained stable at 2 to 2.5 cases per 1000 live births. Worryingly, it is 3.6 per 1000 in school-aged children. There are no deaths from cerebral palsy, except in children who cannot roll over or swallow on their own. For this reason, considering that many children with cerebral palsy have a long adult life in front of them, this situation should also be taken into account in the care services offered to children from childhood (The Center for Children with Special Needs Seattle Children's Hospital, 2011).

The diagnosis of cerebral palsy is essentially clinical and largely dependent on the physician's knowledge of normal motor development and its variants. Except for the mildest cases, the diagnosis of cerebral palsy can usually be made at the age of 12-18 months (The Center for Children with Special Needs Seattle Children's Hospital, 2011). However, Heward (2013) states that severe forms of cerebral palsy are usually diagnosed in the first few months of life, but in most cases, cerebral palsy cannot be detected until the child is two to three years old, that is, until the parents realize that their child has difficulty in balancing or standing.

comprehensive search for etiologies (causes) is required in the young child newly diagnosed with cerebral palsy. This means that the child's history and physical progress, as well as the development of motor skills, are observed and followed in detail at frequent intervals. Specialists experienced in this disorder may be consulted to assist in the diagnosis, such as developmental pediatricians, neurologists, and geneticists. It is also possible to use magnetic resonance (MR) imaging to confirm the diagnosis (The Center for Children with Special Needs Seattle Children's Hospital, 2011). It is known that cerebral palsy has a high risk relationship with some disability conditions. Some of these risks can be listed as follows (The Center for Children with Special Needs Seattle Children's Hospital, 2011):

- Seizures: 35-45%
- Intellectual disability: 40-60%
- Visual disturbances: 20-60%
- Communication disorders including hearing: 30%
- Nutritional difficulties
- Behavioral concerns
- Sleep problems

In children with cerebral palsy, multiple disabilities tend to be the rule rather than the exception, with 80% of these children having at least one related disability, while 40% have three or more related disabilities. Despite these multiple challenges, however, many children with cerebral palsy can become healthy, productive adults. At this point, it should be noted that cerebral palsy is a medical condition that requires competent, comprehensive, continuous, compassionate and community-based care (The Center for Children with Special Needs Seattle Children's Hospital, 2011).

Strategic goals in coping with cerebral palsy should be to ensure that the child grows up in the family and community and to participate as independently as possible in adult life. However, it is essential to monitor motor development and developmental progress at regular intervals. In this process, it should not be ignored that cerebral palsy has a multifaceted nature and requires a comprehensive approach. Because no two cerebral palsy cases will be alike, interventions for one aspect of the child's problem should be made by considering the potential effects in all areas (The Center for Children with Special Needs Seattle Children's Hospital, 2011). Heward (2013) states that the affected parts of the body and its effects on muscle and movement differ in individuals with cerebral palsy. For example, in this process, only one limb (monoplegia), two limbs on the same side of the body (hemiplegia), and three limbs of the body (triplegia) may be affected. In addition, four limbs (both arms and legs) are affected (quadriplegia) and trunk-facial movements are impaired, only the legs are affected (paraplegia), paralysis is formed more in the legs and less in the arms (diplegia), or the legs are primarily affected less in the arms (diplegia). conditions such as being affected (double hemiplegia) may occur (Heward, 2013). For this reason, the contribution of experienced professionals in the process is very important (The Center for Children with Special Needs Seattle Children's Hospital, 2011).

Spina Bifida

Spina Bifida, which means split spine, occurs when the baby is in the womb and the spinal cord is not completely closed (Heward, 2013; Spina Bifida Association, ty.; Trishla Foundation, 2019). Part of the spinal cord and the nerves that control the muscles and sensation in the lower body cannot develop normally (Heward, 2013). Every day, about eight babies born in the United States have Spina Bifida, or a similar birth defect of the brain and spine (Spina Bifida Association, ty).

There are three tests that can be done to detect Spina Bifida before birth (Spina Bifida Association, ty) :

1) 16-18 days of pregnancy. blood test in weeks. This is called alpha - fetoprotein (AFP screening test). This test gives a high result in approximately 75-80% of women who have a fetus with Spina Bifida. However, the AFP test is not the most reliable detection method for Spina Bifida and is no longer preferred.

2) Fetal ultrasound. This is also called a sonogram and Spina Bifida symptoms such as an open spine can be visualized in this way. This is the known way of detecting most pregnancies with Spina Bifida.

3) A test in which a small amount of fluid is removed from the uterus with a fine needle. This is called amniocentesis and is used to look at protein levels.

bifida is the mildest of the three types. bifida occulta and usually only a few vertebrae in the lower spine are defective. The defect is usually not visible from the outside. For example, about 40% of Americans may have spina bifida occulta, but few are aware of it, as they experience few or no symptoms (NICHCY, 2004; cited in Heward, 2013). If the flexible sheath (meninges) surrounding the spinal cord protrudes through an opening in the baby's back at birth, the condition is called a meningocele. These two forms generally do not cause any loss of function in the child (Heward, 2013).

In myelomeningocele, the most common and most serious form of spina bifida, the spinal cord, spinal cord, and nerve roots all protrude. The protruding spinal cord and nerves usually retract into the spinal cord shortly after birth. This condition carries a high risk of stroke and infection. In general, the higher the location of the lesion on the spine, the greater the impact on the body and its functioning. About 7 out of 10,000 live births in the United States result in myelomeningocele, which affects girls more than boys (Spina Bifida Association, 2011; cited in Heward, 2013).

Approximately 70% to 90% of children born with myelomeningocele develop hydrocephalus, an accumulation of cerebrospinal fluid in the tissues surrounding the brain (NICHCY, 2004; cited in Heward, 2013). If left untreated, this condition can lead to head enlargement and serious brain damage. Hydrocephalus can be treated with shunt surgery technique. Usually, the shunt needs to be replaced as the child grows. Adults and teachers who work with children with shunts should be aware that shunt obstruction, disconnection, or infection may cause increased intracranial pressure. Warning signs such as drowsiness, vomiting, headache, irritability, seizures and personality change should be considered; because a blocked shunt can threaten life (Dias, 2003; cited in Heward, 2013). In many school-age children, shunts can be removed when the production and absorption of cerebrospinal fluid is balanced (as cited in Heward, 2013).

While most children with spina bifida use their arms and upper body well, some have fine motor problems and need help with dressing and toileting. In addition, spina bifida often causes some degree of paralysis in the lower extremities. For this reason, these children walk with leg braces, crutches or walkers, and use wheelchairs for longer distances. Because the spinal cord defect usually occurs above where the nerves that control the bladder exit the spinal cord, most children with spina bifida have urinary incontinence and need to use a catheter (tube) or bag to collect their urine (Heward, 2013).

Spinal Cord Injury

Spinal cord injuries are usually the result of a spinal cord lesion caused by a fracture or compression of the vertebrae after a gunshot wound, a blow received during a car accident, or a diving accident. Motor vehicle accidents (41.3%), falls (27.3%), violence (15%) and sports (7.9%) are the most common causes of spinal cord injuries (National Spinal Cord Injury Statistics Center, 2010). Heward, 2013). Spinal cord injury is usually identified by letters and numbers indicating the location of the injury; A C5-6 injury means that the damage occurred at the level of the fifth and sixth cervical vertebrae, a flexible region of the neck. In general, paralysis and loss of sensation occur below the level of injury. The higher the injury to the spine and the greater the injury (lesion) along the spinal cord, the greater the paralysis (Heward, 2013).

People with spinal cord injuries often use wheelchairs for mobility. Children with paraplegia (damages to the first vertebra of the back and lower vertebrae) can use self-propelled wheelchairs. Children with quadriplegia (paralysis of both arms or legs) can have serious respiratory problems due to the involvement of the chest muscles that normally control breathing. Most children with spinal cord injuries do not have bladder and bowel control. It is necessary to follow a careful management program to maintain personal hygiene and prevent infection and skin irritation (Heward, 2013).

A spinal cord injury dramatically and irreversibly changes every aspect of a person's life. Especially when a child or adolescent faces this situation, it brings unique challenges due to physical and psycho-social development (Augutis, 2007). Rehabilitation programs for these children and adolescents are important and often

focus on physical therapy, the use of adaptive devices for mobility and independent living, and the psychological support offered to help adapt to a sudden disability (Heward, 2013). However, although spinal cord injury in children is rarer than in adults, follow-up and treatment differ due to the approach to the growing spine and the anatomy in the developmental stage (Akyol and Taşkapılıoğlu, 2020; Li et al., 2011).

Multiple Sclerosis (MS)

Multiple Sclerosis (MS) is a chronic, autoimmune and demyelinating disease that generally affects the central nervous system in young adults (An, Fan, & Xu, 2018; Hafler et al., 2005; cited in Öztürk, Aytaç, Kızılay, & Sindel, 2017). Although there are approximately 2.5 million Multiple Sclerosis patients in the world, the treatment of the disease and the care of the patients in the process are very costly and can cost billions of dollars. Multiple Sclerosis, which is a very heterogeneous disease, manifests itself as motor, sensory, autonomic and comprehension-cognition disorders depending on the region where the central nervous system is affected (as cited in Öztürk, Aytaç, Kızılay, & Sindel, 2017).

Musculoskeletal Deficiencies

Muscular Dystrophy

Muscular dystrophy is a condition that severely weakens the body muscles and makes them unusable. It is inherited, not as a result of any disease (Kobal (2005). Muscle weakness is usually evident between the ages of 2 and 6, when the child begins to have difficulty running or climbing stairs. The child may exhibit an unusual gait. A protruding stomach, an empty back A child with muscular dystrophy has impaired calf muscles and may appear unusually large as the muscle is replaced by fat tissue (Heward, 2013).

Children with muscular dystrophy often have difficulty standing up after lying down or playing on the floor, and can fall easily. Between the ages of 10 and 14, the child loses the ability to walk. The small muscles of the hands and fingers are usually the last to be affected. Treatment focuses on maintaining the function of unaffected muscles for as long as possible, helping the child and family cope with the limitations of the disease, and providing emotional support and counseling to the child and family (Hill, 1999; cited in Heward, 2013). Providing regular physical therapy, exercising, and using appropriate aids can maintain a great deal of independence. The child should be encouraged to be as active as possible. However, the adult should be careful not to lift a child with muscular dystrophy by the arms because even a slight pull can dislocate the child's limbs (Heward, 2013).

There is no known treatment available to stop or reverse any type of muscular dystrophy. While some cases may be mild, progress very slowly and cause a person to experience adulthood with a moderate disability, muscular dystrophy is usually fatal in adolescence or young adulthood, and this death is usually caused by heart failure or respiratory failure from weakened chest muscles (Heward, 2013).

Lack of Arms and Legs

The fetus cannot develop normally due to various reasons in the mother's womb, or there are some problems during or after birth, and as a result, the child may lose all or a part of his hand, arm or leg. In these cases, prostheses are used to replace the missing body part, both to normalize the appearance of the child and to ensure his participation in daily life. However, limb losses can also occur as a result of accidents, and in this case, partial movement of the arm or leg is provided with the help of prostheses (MEB, 2016b).

Hip Dislocation

It is a condition that occurs as a result of partial or complete dislocation of the femur from the pelvis in the hip joint and is more common in girls (MEB, 2016b; Trishla Foundation, 2019). To prevent hip dislocation, the following should be considered:

- Babies should never be swaddled because swaddling causes hip dislocation.
- The glands should be wide and large, tied above the navel.

- Wide, loose, comfortable clothing should be worn.
- While breastfeeding the baby, the legs should not be combined, they should be left to their normal state.
- While carrying the baby, it should be carried by holding it between the legs with one hand, facing the carrier, or by sitting on the waist for slightly older babies.
- The child's walking should be left to his own development. A walker should not be used (MEB, 2016b).

Difficulties Experiencing Children with Orthopedic Disability

Children with orthopedic disability will face various physical difficulties and accordingly will need various arrangements. These children need physical adjustments or assistive technology throughout their lives at school, at work, and at home. Some of these challenges can be listed as follows (Logsdon , 2021):

Behavioral Conditions

all branches should be aware of the impact of a child with orthopedic disability on their behavior in the classroom. For example, students with such disabilities may tire more quickly than their peers without orthopedic disabilities (Russchen et al ., 2014).

Participation

Especially physical education lessons or movement activities can be challenging for these children. Children with orthopedic disabilities can be exempted from this activity or, if possible, included in the process with adaptations. Those with mild orthopedic disability can participate in the process normally or through adaptations.

Sitting

Because it may be difficult for children with orthopedic disabilities to move around in the classroom or school, these children may need special seating arrangements to assist/support them with posture and mobility. Schools may also need to adjust their schedules to prevent these children from traveling long distances from one classroom to another. Providing elevator access can be a facilitating arrangement at this point (Logsdon , 2021).

Technology

Children with orthopedic disabilities may need assistive technology devices to help them communicate or some activities to help them develop their gross and fine motor skills. Devices and technologies that can be used; It may include wheelchairs, special tables, walking sticks, crutches, communication software or speech recognition software (Logsdon , 2021).

Emotional States

Orthopedic deficiencies limit children physically. This can lead to disappointments, lack of motivation and unhappiness. For this reason, it may be necessary to assist children with orthopedic disabilities in setting realistic goals, within their physical abilities, and in coping with feelings such as hopelessness and disappointments. Because setting some unrealistic goals for children with orthopedic disabilities while they can be reached by their peers can turn into aggression, withdrawing into their shell, and blaming others for children who cannot reach their goals. It will be important to provide guidance to children in these areas and to help them plan their lives realistically (Child Raise Trust , 2020).

Advice to Parents of Children with Orthopedic Disability

Parents of children with orthopedic disabilities should primarily support their children in establishing safe relationships with others. Some tips for this can be listed as follows (Mississippi Department of Education :

- Create opportunities to socialize as early as possible and frequently. One way for children to meet potential friends and begin the socialization process is by being involved in activities and interacting with their peers. It's important to find activities that a child can enjoy and that match their skills. The process of getting to know different people by participating in activities and finding common interests helps the child see that he or she has the ability to make friends . This is an important experience later in life because a child is less likely to develop social anxieties that will harm adult relationships.

- Make sure that healthy children and adults participate in activities that children will attend. It is important for children with orthopedic disabilities to participate in activities attended by children with special needs, in order to realize that they are not alone. However, as they grow up, it is important that they have experience in this regard, as healthy people will enter their lives.
- Let your child make friends with different characteristics. Healthy children and adults often have some concerns about children with orthopedic disabilities. Because they have questions about it. Even if some people interact differently, it is extremely beneficial for all children to see that they are similar in many ways. Because healthy people will one day be included in the lives of individuals with special needs as colleagues, bosses and friends. It is important for a child to make friends from different groups; thus developing socially acceptable forms of interaction.
- Tell your child how much they have in common with others. A child with an orthopedic disability may feel that he is very different from other children, even too different to be friends with. In this case, the child needs to hear what makes him or her similar to other children. This will help him see that the gap between himself and others is more manageable.
- Develop your child's interests. If a child develops an interest, this is an opportunity for him to be social. The best thing about interests is that they often carry over into adulthood. This can give a person with an orthopedic disability the opportunity to meet and chat with others throughout their life. If a child stays at home and does things alone, they won't have these opportunities. Also, experimenting with interests is not only fun but also leads to a sense of mastery and achievement. This, in turn, helps the person to have confidence in their abilities.
- Draw attention to your child's true identity. When a person's identity is built on their disability, it is not very possible for that person to see themselves as a different person. People are better able to cope with challenges such as disability if they can see beyond the labels. A person may have a special need, but perhaps he is a father or mother, a flute player or a chess expert. This is a valuable perspective when a person sees their special need as part of another whole.
- Set limits. All children need boundaries. A child may want to participate in activities that are unsafe or unreasonable in order to fit in with other children. Setting boundaries will help children understand that all relationships, especially those that begin in childhood, must be within reasonable limits, unconditional, and free from pressure.
- Focus on what they can do. A child's special need can shape the direction of their interactions with others. That alone is something that will make a child more distinctly different from their peers. A child may have difficulty moving, move differently, have trouble eating, or use assistive devices. However, this does not change the child's capacity to interact with others. In many cases, he is still able to speak and express his ideas. Although there are limits to his movements, he is able to enjoy a nice day outside. When these points are emphasized at home, a child with an orthopedic disability will be able to see himself or herself as part of a larger world with all kinds of people.
- Talk to other parents. Parents of other children who live nearby or go to school with a child with special needs may not know what the abilities of the child with orthopedic disability are. For this reason, they have hesitations in telling their children that they can be friends with a child with these different characteristics. In this case, parents should share their children's characteristics with other parents.
- Encourage your child to share his story. A child with orthopedic disability may not feel comfortable talking about the nature of his special needs and may see this as something he may never talk about. But sharing how or why he is in this situation and showing that he has the ability to talk and relate to other children shows others that a person with an orthopedic disability is more like everyone else than different.

Related Studies

Sebastian et al (2021) In a study in which they examined the relationship between time spent outdoors and the risk of multiple sclerosis, higher UVR dose in summer have determined that it is protective for multiple sclerosis (MS). Accordingly, if this is a causal relationship, they stated that spending more time in the sun in the summer, in addition to sitting in a sunnier place, may be a strong protector against the development of pediatric MS.

In the study conducted by Bodur, Tütüncü Toker and Okan (2021), the clinical and demographic characteristics of patients diagnosed with multiple sclerosis (MS) within 10 years in a pediatric neurology clinic were examined. At the end of the study, in which a total of 19 patients were examined, 13 of the patients who were diagnosed with MS and started treatment were female and 6 were male. The age of onset of symptoms was 14.09, and the mean age at diagnosis was 15.2. A family history of MS was found in three patients. When the symptoms were examined, it was seen that 11 of the patients applied to the clinic with motor and 9 with sensory findings, 7 with brain stem findings, 2 with cerebellar findings and 6 with visual impairment.

Marrie et al. (2020), in their study in which they compared the prevalence of physical and mental conditions in mothers of children with multiple sclerosis (MS) and their health care utilization rates with mothers of children without MS, included 156 mothers with children with MS and 624 mothers without children with MS. They worked. At the end of the study, it was determined that mothers of children with MS received more mental health services before and after their children were diagnosed with MS than mothers of children without MS.

Kangalgil and Özfer Özçelik (2018), the nutritional status of children with Cerebral Palsy was examined. At the end of the study, in which 40 children aged 7-17 who could be fed orally were the sample, it was determined that 30% of the children were extremely thin and 2.5% were obese, and only 35% of the children were found to have a normal body mass index. However, the data revealed that 52.5% of the participants had problems with eating, while holding the food in their mouth, spilling the food during the meal, coughing or choking seizures were the first among these problems. In addition, it was determined that the children's energy intake was insufficient and their protein intake was sufficient.

The aim of the study conducted by Yağmurlu and Yavuz (2015) is to examine the social competence of children with orthopedic disability and its relationship with the child's temperament, health status and maternal warmth. The participants of the study consisted of 68 children with chronic orthopedic disability, whose mothers were from a disadvantaged background, and whose mean age was 5.94. Within the scope of the study, maternal ratings were used to measure social competence, temperament, general health status and parental warmth. In addition, the severity of children's orthopedic deficiencies was graded by a physician. At the end of the study, it was determined that attentional focus, emotional reactivity and gender significantly predicted social competence. Age at first surgery was slightly negatively correlated with responsiveness. The findings also revealed the importance of attentional regulation and emotional regulation for social functioning in children with orthopedic disabilities.

In the study conducted by Yağmurlu, Yavuz and Sen (2015), the subjective well-being of 105 mothers with a disadvantaged background and a child with orthopedic disability was focused on, and its relationship with the child's health, parental stress, social support and socio-economic status was examined. The results showed that maternal well-being was not significantly associated with child health, but was closely related to economic, social factors and stress.

Sangermano et al. (2014) evaluated the frequency of malnutrition in patients with neuromotor disorders, evaluate the effectiveness of nutritional care given to patients, and identify the problems that need to be addressed while caring for these patients in a general pediatric department. They studied 30 patients, 21 men and 9 women, who were affected by palsy, epileptic encephalopathy, and severe psychomotor retardation. At the end of the study, it was determined that more than 44% of the participants were at risk of malnutrition according to their nutritional difficulties, progressive weight loss, reduction in daily calorie intake, and decreased albumin and transferrin levels.

Lenka and Kant (2013), different social problems of these children were tried to be determined according to their gender, achievement and location by using a sample of 100 children with orthopedic disabilities. The findings show that gender does not play a vital role in social problems, but girls with special needs experience more problems than boys. Successful students have fewer social problems than their peers.

Moore, Kogan, and Parekh (2004) examined the effect of urinary incontinence on self-concept in children with spina bifida. Within the scope of the study, 50 patients aged 7 to 19 were asked to rate themselves on a scale of 1 to 4 in areas related to self-concept such as academic competence, social acceptance, athletic competence, physical appearance, behavioral control, and holistic self-esteem. At the end of the study, it was determined that children with spina bifida generally had lower academic competence, social acceptance and behavioral control

scores, while girls with spina bifida scored lower than boys with spina bifida in the areas of perceived athletic competence, physical appearance and holistic self-esteem. Urinary incontinence girls rated themselves higher in terms of social acceptance and holistic self-esteem than incontinent girls, and incontinent boys gave themselves higher scores in terms of academic competence, social acceptance, physical appearance and behavioral control than incontinent girls.

Conclusion

Individuals with orthopedic disability are defined as “individuals who cannot benefit from normal education and training activities adequately due to their skeletal, nervous system, muscle and joint disabilities despite all corrections”. Children with orthopedic disability will face various physical difficulties and accordingly they will need various arrangements. These children need physical adjustments or assistive technology throughout their lives at school, at work, and at home. Parents of children with orthopedic disabilities should primarily support their children in establishing safe relationships with others. Socialization opportunities should be created for these children as early as possible and frequently. It should be ensured that they make friends with different characteristics. Their awareness of how much they have in common with others should be developed. The interests of these children should be developed, they should be supported for their socialization by focusing on what they can do.

References

- Akyol, M. E., & Taşkapılıoğlu, M. Ö. (2020). Pediatrik omurga yaralanmalarına yaklaşım ve SCIWORET. *Türk Nöroşirürji Dergisi*, 30(3), 501-510.
- An, Q., Fan, C.-H., & Xu, S.-M. (2018). Childhood multiple sclerosis: Clinical features and recent developments on treatment choices and outcomes. *European Review for Medical and Pharmacological Sciences*, 22, 5747-5754
- Augustis, M. (2007). Pediatric Spinal Cord Injury. Erişim: https://spinalis.se/wp-content/uploads/2015/05/Pedriatic_Spinal_Cord_Injury.pdf
- Best, S. J., Heller, K. W., & Bigge, J. L. (2010). Teaching individuals with physical or multiple disabilities. Upper Saddle River, NJ: Merrill/Pearson.
- Bodur, M., Tütüncü Toker, R., & Okan, M. S. (2021). Çocukluk çağında Multipl Skleroz: Tek merkez deneyimi. *Güncel Pediatri*, 19, 225-230. <https://doi.org/10.4274/jcp.2021.0028>
- Center for Parent Information and Resources. (2017). Cerebral Palsy. Erişim: <https://www.parentcenterhub.org/cp/>
- Child Raise Trust. (2020). Orthopedic handicaps/locomotors disability. Erişim: https://www.childraise.com/ortho_hcap.html
- Elibol, F. (2018). Fiziksel engelli çocuklar. E. N. Metin ve A. İ. Yükselen (Ed.) Özel gereksinimli çocuklar ve kaynaştırma içinde (s. 77-91). Ankara: Hedef.
- Heward, W. L. (2016). Exceptional children: An introduction to special education. Upper Saddle River, NJ: Pearson.
- Kangalgil, M., & Özfer Özçelik, A. (2018). Serebral palsili çocukların beslenme durumunun değerlendirilmesi. *Güncel Pediatri*, 16(1):69-84
- Kobal, G. (2005). Ortopedik yetersizlikten etkilenmiş olan ve sağlık yetersizliği olan çocuklar. A. Ataman (Ed.) Özel gereksinimli çocuklar ve özel eğitime giriş içinde (s. 359-390). Ankara: Gündüz Eğitim ve Yayıncılık.
- LaRose, S. E., Thoron, A. C., & Colclasure, B. C. (2016). Teaching students with disabilities: Orthopedic impairment. Erişim: https://www.researchgate.net/publication/329196925_Teaching_students_with_disabilities_Orthopedic_impairment
- Lenka, S. K., & Kant, R. (2013). Problems of orthopedically impaired students in relation to their gender, achievement and locality. *Journal of Educational and Social Research*, 3(2), 249-253. <https://doi.org/10.5901/jesr.2013.v3n2p249>
- Li, Y., Glotzbecker, M. P., Hedequist, D., & Mahan, S. T. (2011). Pediatric spinal trauma. *Trauma*, 14(1), 82-96. <https://doi.org/10.1177/1460408611417232>
- Logsdon, A. (2021). What are orthopedic impairments in kids? Erişim: <https://www.verywellfamily.com/what-is-orthopedic-impairment-2162506>
- Marrie, R. A., O'Mahony, J., Maxwell, C., Ling, V., Yeh, E. A., Arnold, D. L., Bar-Or, A., & Banwell, B. (2020). Increased mental health care use by mothers of children with multiple sclerosis. *Canadian Pediatric Demyelinating Disease Network Neurology*, 94(10), e1040-e1050. <https://doi.org/10.1212/WNL.0000000000008871>
- MEB. (2016a). Çocuk gelişimi ve eğitimi: Ortopedik yetersizlik ve süreğen hastalıklar. Ankara: Milli Eğitim Bakanlığı.
- MEB. (2016b). Çocuk gelişimi ve eğitimi: Ortopedik yetersizlik, süreğen hastalıklar ve kaynaştırma eğitimi. Ankara: Milli Eğitim Bakanlığı.

- Mississippi Department of Education. (t.y.). A family guide to special education services: Orthopedic impairment. Erişim: https://www.mdek12.org/sites/default/files/9.web.family_sped_guide_ortho_impairment.pdf
- Moore, C., Kogan, B. A., & Parekh, A. (2004). Impact of urinary incontinence on self-concept in children with spina bifida. *The Journal of Urology*, 171(4), 1659–1662. <https://doi.org/10.1097/01.ju.0000117865.98229.e5>
- Öztürk, S., Aytaç, G., Kızılay, F., & Sindel, M. (2017). Multipl Skleroz. *Akdeniz Tıp Dergisi*, 3, 137-147.
- Russchen, H. A., Slaman, J., Stam, H. J., van Markus-Doornbosch, F., van den Berg-Emons, R. J., Roebroek, M. E., & LEARN 2 MOVE Research Group. (2014). Focus on fatigue amongst young adults with spastic cerebral palsy. *Journal of Neuroengineering and Rehabilitation*, 11, 161. <https://doi.org/10.1186/1743-0003-11-161>
- Sangermano, M., D’Aniello, R., Massa, G., Albano, R., Pisano, P., Budetta, M., Scuccimarra, G., Papa, E., Coppola, G., & Vajro, P. (2014). Nutritional problems in children with neuromotor disabilities: An Italian case series. *Italian Journal of Pediatrics*, 40, 1-5.
- Sebastian, P., Cherbuin, N., Barcellos, L. F., Roalstad, S., Casper, C., Hart, J., Aaen, G. S. Krupp, L., Benson, L., Gorman, M., Candee, M., Chitnis, T., Goyal, M., Greenberg, B., Mar, S., Rodriguez, M., Rubin, J., Schreiner, T., Waldman, A., Weinstock-Guttman, B., Graves, J., Waubant, E., & Lucas, R. (2021). Association between time spent outdoors and risk of multiple sclerosis. *US Network of Pediatric Multiple Sclerosis Centers Neurology*, 98(3), e267-e278. <https://doi.org/10.1212/WNL.00000000000013045>
- Spina Bifida Association. (t.y.). What is Spina Bifida? Erişim: <https://www.spinabifidaassociation.org/wp-content/uploads/What-is-Spina-Bifida1.pdf>
- The Center for Children with Special Needs Seattle Children’s Hospital. (2011). Cerebral Palsy: Critical elements of care. Erişim: https://depts.washington.edu/dbpeds/Cerebral%20Palsy_Critical%20Elements%20of%20Care%206_2011.pdf
- Trishla Foundation (2019). Pediatric disabilities/children orthopedic problem. Erişim: <https://www.trishlafoundation.com/children-orthopedic-problem/>
- Yagmurlu, B., & Yavuz, H. M. (2015). Social competence and temperament in children with chronic orthopaedic disability. *International Journal of Disability, Development and Education*, 62(1), 83-98. <https://www.doi.org/10.1080/1034912x.2014.984590>
- Yagmurlu, B., Yavuz, H. M., & Sen, H. (2014). Well-being of mothers of children with orthopedic disabilities in a disadvantaged context: Findings from Turkey. *Journal of Child and Family Studies*, 24(4), 948-956. <https://www.doi.org/10.1007/s10826-014-9905-8>