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Review Article

Motor, physical, and psychosocial parameters and assessment in preschool children

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ABSTRACT

Managing children's motor, physical, and psychosocial aspects in their formative preschool years is a complex and personalized endeavor, emphasizing early intervention and interdisciplinary collaboration. Motor development management in preschool children underscores the importance of timely intervention. Pediatric physical and occupational therapies play pivotal roles in addressing these challenges, employing engaging activities and exercises tailored to individual needs. The individualized nature of these interventions recognizes each child's unique journey and fosters skill acquisition and development. In parallel, managing physical parameters in preschool children involves growth monitoring, nutritional counseling, and addressing common health concerns. Consistent growth monitoring helps identify deviations from expected patterns, allowing for early intervention in cases of growth-related concerns or nutritional deficiencies. Preschoolers' susceptibility to common health issues necessitates medical management, symptom control, and preventive measures. Psychosocial development management in preschool children centers on emotional resilience, social competence, and cognitive readiness. The discussion also highlights emerging evidence of a link between motor skills and executive functions in preschool-aged children, suggesting opportunities for evidence-based interventions and coordination-demanding activities to optimize motor and cognitive development in this crucial developmental phase.

Keywords: Assessment, Children, Motor, Parameters, Psychosocial

INTRODUCTION

The wellbeing and learning of children rely on their motor, physical, and psychosocial development. However, certain factors, like genetics, environment, or medical conditions, can cause challenges in these areas for some children. For instance, Developmental Coordination Disorder is a condition that impacts 5% of children globally. [1-3] This condition affects a child's motor skills, coordination, and planning abilities. These have a

negative impact on their activities and also their academic performance. Children with DCD may also have lower body mass index and fitness levels than their peers. Additionally, they might face social challenges more frequently.[4] As a result, it becomes crucial to identify and evaluate both children's motor skills, physical abilities, and psychosocial aspects, with and without DCD. This assessment is very crucial for support and intervention measures.

Engaging in play activities with having goals, helps children stay active and promotes the movement of their muscles. Having outdoor playtime, Is very important for preschool children for their health and development. Unfortunately, many preschoolers in childcare settings fall short of the recommended 60 minutes of play. The major factor in which humans learn to interact with others lies between their neural behavior and environment.[5-7] The acquisition of gross motor skills, such as running, jumping, and climbing, enhances physical fitness and provides opportunities for active play. Fine motor skills, involving tasks like drawing, writing, and buttoning, foster dexterity and pave the way for academic readiness. Evaluating children's motor skills in preschool helps teachers, healthcare providers, and parents detect delays or challenges early on. This allows them to provide the support and intervention to ensure that kids develop optimally. Making lifestyle adjustments that promote a diet incorporating physical activity and reducing sedentary habits are advised to enhance the wellbeing of children. Despite all, changing health behaviors and lifestyles of a child can impact on their regular function and academic performance as a whole. By prioritizing nutrition maintaining health from infancy through childhood boosting the immune system ensuring safer pregnancies and childbirths and minimizing the risk of metabolic disorders, one can significantly improve their overall diet.[8,9] It is crucial to keep track of a person's growth, such as their height and weight. This helps us detect any variations from the patterns, which could be a sign of underlying health problems or nutritional deficiencies. Addressing these concerns promptly is crucial to promote healthy growth and development. Moreover, gaining insights into the eating habits and food preferences of children in preschool enables the creation of strategies for promoting healthy nutrition and preventing nutritional issues. Psychosocial parameters encompass the emotional and social dimensions of preschool children's development. Significant socialization experiences mark these years as children begin to interact with peers, form friendships, and navigate various social contexts.[10,11] The emotional control and growth of abilities are crucial in influencing a child's social and emotional health. When assessing the aspects of preschoolers, we need to consider their expressions, interactions with others, and behavioral patterns. It also includes monitoring cognitive development, language acquisition, and readiness for formal education. Understanding the significance of conducting evaluations can help teachers and caregivers create a nurturing and supportive setting that promotes emotional strength, social skills, and cognitive development.[12] To gain an understanding of children's development during this stage we can assess their motor skills, physical abilities and emotional growth. This assessment will enable us to guide our intervention strategies. It is crucial to identify any challenges or health concerns on in order to provide timely interventions, for preschool children. This helps prevent long term consequences and ensures outcomes for them. In this review we will explore aspects of assessing motor skills, physical abilities and psychosocial factors in children. Our goal is to understand the methods of assessment used the strategies employed and how they contribute to promoting the health and wellbeing of these students. By gaining insights into their development and addressing their needs we can contribute towards a healthier future for preschool children. This review study aims to gather existing information and analyze it with regards to motor, physical and psychosocial parameters, in children.

LITERATURE SEARCH

We conducted a literature search on September 11, 2023, using the Medline and PubMed databases. Our search focused on the topics of Motor, Physical, and Psychosocial Parameters, along with related terms in each database. To enhance our research, we also explored Google Scholar, starting with the papers we initially found and using their references. We primarily concentrated on papers that provided insights into the parameters, clinical presentation, and management. We set criteria for inclusion, such as excluding papers published before 2008 and requiring English-language publications. There were no limitations regarding age or publication type. Our inclusion criteria encompassed papers from journals like BMC Journal, AJGP and notable articles from esteemed organizations.

DISCUSSION

Understanding childhood development involves exploring motor, physical, and psychosocial aspects in children. It entails examining how children grow physically, mentally, and socially. Various professionals, like doctors, teachers, and caregivers, have roles in unraveling the mysteries of this stage of a child's life. In this discussion, we will explore aspects by looking at the signs that offer insights into a child's development. Additionally, we will delve into assessment methods that utilize tools and approaches to gain an understanding of each child's unique journey. Moreover, this study will provide insights into assessing children's main parameters related to their motor skills, physical well-being, and psychological aspects.

Clinical manifestations

Preschool children need comprehensive examination of their motor, physical, and psychological parameters

thoroughly in order to keep them in monitoring. Understanding the clinical manifestations in preschool children requires those results to identify the key point that needs to assess. How children move and develop physically can give us information about their growth, health, and adjusting to the world around them. When it comes to preschool kids, their motor development is a part of their overall well-being because it shows us how well they can do different physical activities and tasks. However, some children might experience delays or issues in their motor development, which can impact their ability to do things like walk, run, climb, or use their hands and fingers effectively. Standardized tests and observations that compare the child's performance with age-appropriate milestones can detect these delays or abnormalities. Based on an analysis and synthesis of studies involving accelerometers, it was found that 60% of young children in the preschool age range followed the physical activity guidelines set by the World Health Organization. These guidelines recommend a total of 180 minutes of activity.[13] Getting at one hour of moderate physical activity every day is recommended. However, there was substantial variability in the prevalence estimates between different accelerometer cut-points. Moreover, girls were significantly less likely to achieve the recommendation than boys were.[14] Early intervention is crucial for managing motor development challenges in preschool children, as it can enhance their developmental potential and prevent further complications. Clinical management may involve pediatric physical or occupational therapy, which can provide exercises, play-based activities, and adaptive equipment to improve motor development. Preschool children's physical characteristics encompass aspects like their growth patterns, nutritional status, and overall health indicators. This can be affected to different kids as this varies on individual’s genetics and their surroundings. Any deviations from the expected growth patterns, such as stunted growth or excessive weight gain, might indicate health issues or nutritional concerns that require evaluation and proper management by healthcare professionals. As an example, according to data from UNICEF, around 144 million children under the age of 5 were stunting (height for age) in 2022, while approximately 38.3 million children were affected by overweight or obesity. Moreover, physical well-being in children can be influenced by ailments like respiratory infections or allergies, which may affect their quality of life.[15] The clinical management of these conditions often involves treatment for symptoms and preventive measures such as immunization and maintaining hygiene practices. Based on information provided by UNICEF, there are still 2.3 billion individuals who do not have access to a hand washing facility at their residences. This lack of access significantly raises the likelihood of contracting diseases. The psychosocial development of children in their years revolves around the development of control, socialization abilities, and cognitive growth. These aspects play a role in ensuring their psychological and relational welfare. However, some children may exhibit variations or difficulties in these domains, such as temperamental differences, anxiety or aggression, or poor social interactions. Clinical instruments that measure emotional and social competencies and cognitive readiness for formal education can assess these variations or difficulties. According to CDC data, parents reported in 2016-2019 that their child mostly or always showed affection (97%), resilience (87.9%), positivity (98.7%), and curiosity (93.9%) among children aged 3-5 years. However, a significant of children 10% experience health concerns that require the assistance of healthcare professionals. When it comes to supporting their social growth, clinical interventions, like counseling, play therapy, or behavior-focused approaches, can make a difference.[16] Creating an atmosphere that nurtures the well-being of students requires collaboration between educators and parents.

Assessment

Assessing preschool children's motor, physical, and psychosocial parameters necessitates a comprehensive and age-appropriate approach. Doctors and teachers use assessment methods and techniques to understand how a child grows and does. Evaluating a Child's motor skills usually involves utilizing tests and making observations as part of the motor assessment process.

Motor assessment: The Bruininks-Oseretsky test of motor proficiency (BOT-2) and the peabody developmental motor scales (PDMS-2) are commonly used assessments to gauge a child's motor abilities.[17] Clinicians observe a child's performance in tasks such as balancing, running, jumping, and fine motor activities like drawing or cutting. Assessments aim to identify delays or motor disorders and inform intervention strategies.

Physical assessment: Physical assessments encompass the monitoring of growth parameters, nutritional status, and overall health. In different places, many health professionals use growth charts in order to track the trends in height, weight, and body mass index. Detect any deviations from the patterns. Additionally, nutritional assessments involve dietary evaluations to address malnutrition or nutritional deficiency concerns. Clinical evaluations also encompass physical examinations to diagnose and manage common childhood illnesses and health conditions.

Psychosocial assessment: A psychosocial assessment involves exploring a Child's social and cognitive growth. Clinical manifestations in this domain are assessed through a combination of observations, interviews, and standardized assessments. ASQ and SDQ surveys are primarily employed to evaluate different facets of psychosocial growth.[18] Clinicians explore emotional regulation, social interactions, language development, and school readiness to understand a child's psychosocial well-being better.

Management

Managing children's motor, physical, and psychosocial aspects is an intricate process that requires a holistic and personalized approach. Effective management strategies are grounded in early intervention, targeted support, and a multidisciplinary framework, all aimed at addressing developmental challenges and promoting holistic well-being during these formative years.[19] Motor development management in preschool children underscores the significance of early intervention. During the stages of a child's development, it is crucial to acquire motor skills that serve as the building blocks for physical abilities and active participation in the world. When delays or challenges in motor development are identified, clinicians and educators collaborate to design tailored management strategies. Other interventions like Pediatric physical therapy and occupational therapy play instrumental roles in motor development management.[20] These therapeutic modalities are designed to address gross and fine motor skill delays. Skilled therapists work closely with children to provide targeted interventions. These interventions are often playful in nature, incorporating games, activities, and exercises that engage children while promoting motor skill acquisition. Also, recognizing that each child's unique motor development journey is crucial. Consequently, management strategies are individualized to meet specific needs. For instance, a child struggling with gross motor skills like balance and coordination might engage in activities that challenge these areas, such as walking on balance beams or playing catch. In contrast, a child who struggles with motor skills may engage in activities that improve hand-eye coordination, such as stringing beads or sketching. In some cases, the use of adaptive equipment and tools can significantly enhance motor development. These tools are tailored to the child's needs and may include items like weighted pencils to improve grip strength or specialized seating to support posture and stability. Adaptive equipment empowers children to engage in activities that might otherwise be challenging. Managing physical parameters in preschool children encompasses a spectrum of considerations, including growth monitoring, nutritional counseling, and addressing common health concerns. Creating an environment that supports healthy growth and development during these crucial years is imperative. Regular growth monitoring is a cornerstone of physical parameters management. Medical professionals monitor changes in height, weight, and body mass index to detect any variations in the patterns. This ongoing assessment helps detect growth-related concerns, such as stunted growth or excessive weight gain, which may signal underlying health issues or nutritional deficiencies. Despite all, nutritional counseling is a vital component of physical parameters management. Preschool-age children undergo rapid growth and development, requiring proper nutrition for optimal health. Clinical management may involve dietary modifications and recommendations to ensure balanced nutrition. Ensuring nutrition through adjustments or taking supplements is crucial for promoting healthy development.

Most preschool-aged children may suffer from different health problem. At this age, they are vulnerable to infections, allergies, and minor accidents. Managing these concerns involves medical treatment, symptom management, and preventive measures. For instance, children with allergies may require allergen avoidance strategies and medication management, while respiratory infections may necessitate proper hygiene and timely medical interventions.[21] Psychosocial development management in preschool children is a dynamic process that centers on fostering emotional resilience, social competence, and cognitive readiness. This aspect of management is dedicated to fostering the social welfare of a child. Another approach like psychosocial counseling, provides essential support for children experiencing emotional challenges or behavioral issues. Highly trained counselors work with children to help them understand and express their emotions effectively. Various therapeutic approaches, such as play therapy, art therapy, and behavioral interventions, are utilized to support regulation and enhance social interactions. Play-based interventions are fundamental in psychosocial development management. Play is preschool children's primary mode of expression, offering them a safe space to explore and process emotions. Play therapists work with children, engaging them in activities that help them express themselves, find solutions to problems, and develop their skills. Collaboration with educators and parents: Successful psychosocial development management requires collaboration between clinical professionals, educators, and parents. Preschool-aged kids devote an amount of their day in environments, so it is essential for educators to be aware of and responsive to their psychological and social needs.[22] Open communication between parents, educators, and clinicians ensures a coordinated approach that supports emotional resilience and social competence. Despite the lack of overarching strong evidence, the study finds that there is some evidence to show that the relationship between motor skills and executive functions occurs during child development in preschool-aged children. This is interesting because it means this can explore further to optimize motor and executive development in children through evidence-based interventions that are developmentally appropriate. Furthermore, highly coordination-demanding physical activities connecting physical capacity and cognitive components should be purposively involved in preschool daily routines.

CONCLUSION

The assessment and management of motor, physical, and psychosocial parameters in preschool children are essential components of pediatric healthcare and education. Clinical manifestations provide valuable insights into a child's development, guiding assessments, and intervention strategies. Early identification and

targeted management of developmental challenges, health concerns, and psychosocial needs empower preschool children to thrive and reach their full potential during these critical formative years. A comprehensive and multidisciplinary approach is fundamental to promoting the holistic well-being of preschool-aged children.

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