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Best Practices of Occupational Therapy towards Case Management for Person with Autism Spectrum and Pervasive Developmental Disorders

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Abstract - Pervasive Development Disorder (PDD) and Autism Spectrum Disorder (ASD) and is the most common neurological disorder developmental disability and affecting people across their lifespan, although usually first diagnosed in children. According to Autism Speaks Canada, an estimated 1 out of 42 boys and 1 in 189 girls are diagnosed with autism. ASD and PDD presents differently in every individual, impacting all aspects of an individual's development and occupational performance, including their ability to perform activities of self-care of daily living, and to participate in education for children, and leisure and recreation activities, as well as overall, their ability to communicate and socially participate. Occupational therapists use their knowledge of sensory processing, emotional and behavioral regulation, oral, fine, and gross motor development and task analysis to support learning and participation. Occupational therapists bring a unique and comprehensive perspective in the treatment of persons with ASD, in that they are highly educated and experienced to evaluate and provide intervention, both direct treatment and consultation to families, educators and caregivers, in the areas of physical, sensory processing, and social-emotional health in all environments of a person with an ASD. In addition, occupational therapists support the many transitions in life such as Activities Daily Living Skills (ADL) from home to daycare, from daycare to school, and from school to society, including vocational or productive work environments. Occupational therapists provide support to families through education, consultation, advocacy and assisting with access to community resources. This paper is to review on occupational therapy works and practice in coping with children with ASD as it is focuses on the needs of affected children and their families.

Keywords: Occupational Therapy, Best Practices, Case Management and Autism Spectrum Disorders & Pervasive Development Disorder

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I. EPIDEMICS OF AUTISM SPECTRUM DISORDER AND ACTIVITY OF DAILY LIVING SKILLS (ADL)

Autism Spectrum Disorder (ASD) is a lifelong neurodevelopment disorders affecting a wide range of impairments in the aspects of social communication, behavior and adaptive abilities. Core features of ASD are reported as difficulties in language and communication skills, social interaction and repetitive pattern of behaviors including play activities. Often, children with ASD are reported to have limited ability in forming social relationship due to inability to communicate effectively with their typically developing peers and play differently from others. These might leads to social isolation due to the inability to participate in the social activity/event especially during play (Lieberman & Yoder, 2012). Hence, parents and family should play an important role in enhancing the child strength as well as supporting the child limitation to participate actively in everyday social activity (Potvin, Prelock & Snider, 2018). Arrangement of play-dates may be one of the ways that can be carried out by parents and/or caregivers of children with ASD in order to encourage successful engagement with peers.

Children with ASD may react differently to certain sensory stimuli that are perceived by others as common everyday sensory stimuli. These hyper- or hypo-responsiveness towards certain common sensory stimuli often reported among children with ASD that could possibly affect their play behaviors and daily living activities (Hochhauser & Engel-Yeger, 2010). In the latest revision of the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM 5) published in 2013, hyper- or hypo-responsiveness towards certain sensory input has been recognized as one of the core difficulties in ASD. Difficulties in processing certain sensory inputs, or commonly known as sensory processing disorders often leads to difficulties in managing daily activities including academic related activities both

at home and school settings (LeVesser & Berg, 2019). These sensory processing disorders can be in the form of the ability to process and react appropriately towards certain textures, sounds, odors, tastes, or certain visual inputs received from surroundings (Baranek, David, Poe, Stone, & Watson, 2016). Some children with ASD was also reported to show indifferent towards pain and/or temperature that might harm themselves. It is important for the children with ASD to be able to properly integrate and organize their sensory processing abilities in order for them to participate actively in daily living tasks including in play and during academic activities in school (Koening & Rudney, 2010).

Apart from difficulties in social communication, repetitive behaviors and sensory processing, some children with ASD were generally described to experience motor impairments (Jansiewicz, Goldberg, Newschaffer, Denckla, Landa, & Mostofsky, 2016). Although, the DSM 5 (APA, 2013) does not include motor impairments as one of the core features in ASD, research on this aspect generally revealed motor difficulties among children with ASD (Waterhouse, 2008). This motor impairment involved a wide range of fine and gross motor abilities often reported in the aspect of gait, balance, postural control, motor planning as well as coordination task (Jansiewicz, et al., 2006; Waterhouse, 2008). Children with ASD were having difficulties to perform certain task involving fine motor manipulation and coordination. This could possibly hinder their ability to perform effectively in certain daily tasks, such as in buttoning and unbuttoning their garments and also in certain academic related tasks, such as in writing and using scissors. These motor difficulties may perhaps affect adaptive behaviors and ability to participate in daily activities including playing with peers.

Parents and or caregivers should be empowered in order to help them understand and have a clear perception of the challenges faced by their children with ASD. With clear understanding of why their children with ASD reacted or behaved the way they do, parents and/or caregivers may possibly be able to provide supports needed by their children and using appropriate approaches when dealing with certain challenges. This might encourage parents and/or caregivers to actively engage and continue with the interventions planning proposed by the health care providers. One of these important health care providers in the management of the children with ASD is an occupational therapy that can provide comprehensive evaluation and intervention planning for the children with ASD and their family.

Autism spectrum disorder has been identified as a spectrum of core condition with a different level of severity from mild to severe disorders (DSM 5, 2013). To date, the etiology of ASD is yet to be fully understood by researchers, nor its cure, however much has been understand regarding to the core features shown by the children with ASD which could help in the management of this condition. It has been highly suggested that an effective management of the children with ASD should be a multidisciplinary team approaches involving various health care professionals alongside parents and or caregivers as an important decision makers (Becerra, et al., 2017).

II. BEST PRACTICES OF OCCUPATIONA THERAPEUTIC

Occupational therapy is a client-centered health profession concerned with promoting health and wellbeing through occupation. Occupations refer to the everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want to, and are expected to do (World Federation of Occupational Therapists, 2011). The primary goal of occupational therapy is to enable people to participate in their daily occupations or activities. The primary aim of occupational therapy practices is to ensure that the children with ASD are able to participate successfully in their daily living activities at home, school and community settings. Generally, occupational therapy make used of the client- and family-centered approaches in managing children with ASD and their family (Miller-Kuhanek & Watling, 2010). Parents and/or caregivers concerns and needs are taken into consideration when planning for the management of their children with ASD. Most often, communication and collaboration with other health care professionals, educational professionals as well as welfare health officer are maintained to ensure smooth delivery of the services to the children with ASD and their family in addressing their specific needs.

Assessment Process in Occupational Therapy

Occupational therapy practices provide intervention that has been designed individually for each child with ASD's needs based on appropriate evaluations process. Assessment in occupational therapy is an important initial procedure in the process of providing relevant, effective and most needed intervention to the children with ASD-PDD and their family. Occupational therapy evaluation can take many forms and also can be performed in various settings, such as in clinical setting, home, school or in the child's own natural environment, depending on the specifics needs of the children with ASD . Occupational therapy practitioners often evaluating the children with ASD's strength and limitation in achieving independence in daily living tasks, play and activities important to them and their family. Comprehensive assessments are needed for various reasons, including establishing the children's current level of performances, and as well as determining for progress of the intervention provided and also planning for suitable school enrolment (Watling, 2010). Based on the findings from the assessment, a comprehensive intervention planning can be formulated to be implemented to the children with ASD and PDD. Parents and/or caregivers play an important role as a main decision makers, therefore it is best to actively involve them in the process of intervention planning in order for them to understand the reasons behind the proposed occupational therapy intervention for their children with ASD and PDD.

The communication difficulties faced by the children with ASD, parents and/or caregivers often being consulted as important informant regarding their children challenges. Apart from parents and/or caregivers, interviews with other family members such as siblings and the child's teacher is also important in order to determine the child's roles, interests, skills, habits, routines, limitations and strengths. These information may assist occupational therapy practitioners in evaluating certain task's demand and planning for task analysis suitable to the ability of the children with ASD. Occupational therapy practitioners often carried out assessment using standardized functional tools or questionnaires to assess for specific skills or performances, or it can also be carried out using non-standardised methods by observing the children with ASD in their natural environment, or, most often, a combination of both methods were used.

Occupational Therapy Intervention Strategies

Occupational therapy practitioners implementing intervention based on the best available evidence on its effectiveness for children with ASD and PDD (Case-Smith, 2010; Pfeiffer, Koenig, Kinnealey, Sheppard, & Henderson, 2011). Interventions provided for children with ASD and their family are centered on the specific objectives set out to be achieved in a certain timeframe. Various different strategies and approaches were used to attain the outcome needed. Often, a combinations of different strategies and approaches were used by occupational therapy practitioners in their practices with children with ASD and their family. Occupational therapy practitioners centered their intervention based on their core roles which is to help the children with ASD and PDD to improve independence in performing daily living activities, including self-care, school and/or academic related tasks, and leisure and/or play activities. According to Children's Hospital of Philadelphia (2016), occupational therapy interventions are child-centered and are designed to help the child build on areas of strength and improve skills in areas of weakness. Often a session with an OT looks like a fascinating and elaborate play scheme. The following is a non-exhaustive list of some common intervention areas:

- Fine Motor Skills (development of small muscles needed for fingers to pick up small items, such as Cheerios)
- Visual Motor Integration (hand eye coordination, such as picking up small pieces of food from the plate and getting it to the mouth)
- Gross Motor Coordination/ Postural stability (walking, standing, running, gross play skills)
- Cognition and perception (thinking and problem solving, such as trying to figure out how to get a toy out of a box)
- Sensory Processing (integrating information coming in from the different senses, such as adjusting your walk from the boardwalk to the sand and into the water on a summer day at the beach)
- Environmental modifications/adaptive equipment/ technology (modifying the environment so a child can "do" the "work," such as sliding a special pencil grip onto the pencil so it can be held securely for writing)

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Case Management and Self-Care Activities

Case management and self-care activities are basic occupation of everyday life, or known as activities of daily living (ADLs). ADL involve activities such as taking care of oneself including feeding, bathing, dressing, toileting, personal hygiene and grooming. Children with ASD often reported to have limited functional independence in self-care aspect (LaVesser & Hilton, 2010). This may be due to their limited cognitive abilities or it may also possibly be affected owing to their difficulties in sensory processing and other core difficulties related to this condition (LaVesser & Hilton, 2010). Training of these skills among children with ASD may be a great challenges to parents and/or caregivers and occupational therapy practitioners due to their difficulties in understanding verbal instructions which is one of the core features of this condition. Difficulties in managing self-care activities independently among children with ASD may hinder their active participation in family life, school activities, as well as in engaging in community activities (Anderson, Jablonski, Thomeer, & Knapp (2007).

Self-care skills such as dressing, bathing, feeding, and personal hygiene consist of fixed sequences of certain repetitive steps that requires little higher thinking process once the skills are mastered successfully. Occupational therapy practitioners are trained in analysing certain activities/tasks and identifying each step in completing the task successfully. Task analysis performed by occupational therapy practitioners refers to a process of breaking down an activity to produce the simple step-by-step sequences before intervention sessions take place. From this analysis, a breakdown of a complex task into smaller achievable steps is produced, to help children with ASD- PDD to perform them successfully.

Difficulties in understanding verbal instruction among the children with ASD, occupational therapy practitioners often used visual cues or a pictorial approach to help the child understand what is needed to be done in each small steps of the task demand (Pierce & Schreibman, 1994; Watling, 2004). It was reported that the children with ASD may possibly learn better with pictures prompts compared to verbal instructions alone (Watling, 2004). However, there is no single intervention or approach that can possibly be suitable for all children with ASD, although they are diagnosed with the same condition and present with similar challenges (LaVesser & Hilton, 2010). Hence, proper assessment and careful planning of the occupational therapy intervention programme are needed to suit each child's strengths and limitations. This chapter will discuss basic dressing and toileting training for children with ASD using some simple and common occupational therapy approaches. Parents and/or caregivers are encouraged to seek further advice and guidance from occupational therapy practitioners if they wish to implement the suggested training.

Coping with Dressing Skills

Anderson et al. (2007) outline several indicators when evaluating for dressing readiness in children with ASD including ability to:

- Maintain attention in activity for at least 5-10 minutes,
- Follow simple verbal instruction such as "look,"
- Imitate others' actions,
- Show interest and help out in the dressing activity performed by an adult, such as lifting his/her feet up to help with putting on the pants,
- Aware of his/her body position in space, and
- Know his/her body parts such as left or right hand, front and back side of his/her body

Parents and/or caregivers are encourage evaluating their children with ASD and to looks for all these signs demonstrated by their children before attempting to start the training process.

Clothing Management and Self Dressing Skills

Preferably, parents and/or caregivers are encourage to provide simple garments with less fasteners, if possible, and more importantly it has to be suitable with the child age and developmental capability. For example, it is much easier to pull out ones socks rather than to put in on. In fact, developmentally, pulling out socks typically mastered first before the child learn to put on his/her socks independently. The same goes with pants, shirts and shoes.

Usually, the undressing or removing clothes are much easier compared to dressing or putting on clothes. Simple and loose-fitting garments will make dressing task much simpler for the children with ASD and each step in the task analysis sequences will be much easier for them to follow. This is especially during the dressing training process where it is best to avoid any unnecessary disappointment and to increase the rates of successful dressing or undressing attempts. Of course, pulling out loose shirts will be much easier rather that pulling out fitting shirts which may increase the child disappointment and therefore he/she will be less motivated to continue with the training.

Managing Adaptations and Modifications

Children with Autism need to have specific adaptations, accommodations and modifications made for them to develop the ability to one day live an independent life. Adaptations include changes to one's physical environment, accommodations are compromises made to fit the child's academic abilities. Certain adaptation can be performed if needed. For example, replacing smaller buttons with bigger buttons on the child's shirts to improve ability to do the buttoning or unbuttoning successfully. Or, removing buttons and replacing it with hook-and-loop on the pants can also be done. Removing tags on shirts could help for those who are sensitive to textile stimuli that may be caused by the tags. Choosing comfortable clothing fabrics may also be helpful to those who demonstrated hyper-sensitivity to certain texture of the clothing fabrics.

Visual Cue Supports

As mentioned earlier, a visual supports may be used to help the children with ASD to understand the tasks breakdown needed to be carried out in the dressing or undressing sequences. A visual support refers to using a picture or other visual item to communicate with a child who has difficulty understanding or using language. Visual supports can be photographs, drawings, objects, written words, or lists. Research has shown that visual supports work well as a way to communicate. Simple pictures, either of the child himself/herself, or the child's siblings can be taken for the child to refer to during the training process. Or alternatively, pictures or images that are readily and commercially available can also be used.

Techniques of Rewardings or Reinforcement

It is important for parents and/or caregivers to identify items that are suitable as rewards to the children with ASD. Successful attempts made by the children with ASD in dressing and undressing training should be rewarded to increase the child's motivation. These rewards items have to be something motivating to the child, such as his/her favourite toys, foods, drinks, games or watching his/her favourite movies. If suitable, social rewards such as praise or a hug can also be used. Rewards should be reduced systematically once the child has mastered certain skills in order to achieve total independence in the dressing activity.

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Quick tips for parents and/or caregivers in dressing and undressing activity:

- Look for the child's sign of readiness for dressing activity.
- Prepare simple and suitable clothing.
- Less and loose garments are better than complex and fit clothing.
- Breakdown the dressing or undressing tasks into smaller steps sequences.
- Adapt or modify the garments, if needed.
- Use visual supports to help with understanding. Pictures can be more stimulating to look at rather than to hear our voice.
- Praise or rewards accordingly for each steps mastered by the child to increase motivation.

☑Avoid too much disappointment during the training process.

Stop the training if the child is considered as not ready for it yet. You may feel disappointed, but you can always try again another time with better luck. It is always best to consult with your occupational therapy practitioners if in doubt.

Figure 1: Quick Tips for Parents in Dressing and Undressing Activity (Source, year)

Toileting Skills

Ability to control and manage their own toileting schedules can be considered as one of the most important self-care skills in children with ASD. Often, independence in toileting may also determine acceptance into the school system. It is suggested that toilet training be started at the age of 18 months and above. It is expected that a child should already be toilet trained by the age of 5 to 6 years, a crucial age before they enter the school system.

Managing Toileting Skills

When evaluating for toileting readiness, a few factors need to be assessed, especially in terms of the child's existing skills for toileting. Occupational therapy practitioners will assess for the child's level of awareness which include the child's ability to:

- Show discomfort due to soiled or wet diapers/clothing such as changes in behaviour or pulling his/her pants
- Indicate a need to go to the toilet with changes in behaviors or by seeming uncomfortable such as suddenly stopping his/her activity and sitting alone in a corner
- Show interest in response to seeing the toilet or with objects related to toileting, such as demonstrating curiosity in seeing other people entering the toilet.

Any of these moments of awareness or changes in behaviour regarding toileting activity may indicate that toilet training could be initiated with the child with ASD. It is also important to ensure that the child with ASD does not have any physiological or medical issues that may interrupt the toilet training process, such as the child urinating and/or getting soiled while napping or sleeping. Any gastrointestinal issues should be properly addressed before starting the toilet training process. Other than that, the child's ability to sit and hold his/her body in an upright

position and being able to participate in some basic dressing and/or undressing activities can also indicate toileting readiness.

Self Care and Managing Dressing Pants for Toileting

Parents and/or caregivers are encouraged to provide simple basic pants during the toilet training process and to avoid pants with fasteners. It is much easier for the child with ASD to manage pants with a loose elastic waistband to slide them down and to pull them back up. During the toilet training process, it is best for children with ASD not to wear diapers or pull-up. This will provide a better sensation to make the child aware if he/she is wet or soiled.

Adaptations and Modifications

Simple modification can be made to the existing toilet seat. It is better to ensure that the child can be seated comfortably on the toilet seat. A commercially-available child-sized toilet seat can be put on top of the existence toilet seat to provide better stability. A small stool can be put on the floor to make sure the child's feet can be placed comfortably and to avoid the feet dangling. Seating children with ASD in a stable and comfortable position on the toilet is important so they do not feel insecure with the process.

Visual Spatial Support Services

A task analysis for the toileting process should be prepared prior to the training. The sequences for toileting can consist of (1) go to the bathroom/toilet, (2) pull pants down, (3) pee in the toilet, (4) pull pants up, (5) flush the toilet, (6) wash hands, and (7) dry hands. These steps of the toileting sequence can be produced in pictures and placed or stuck on the wall in the bathroom or where the toilet is located. This will provide visual support for the step-by-step process in toileting that can be used to help the child follow and remember the process. Simple pictures, either of the child himself/herself, or the child's siblings, can be taken for the child to refer to during the toilet training process. Or alternatively, pictures or images that are readily and commercially available can also be used.

Suitable Rewards or Reinforcement

Providing suitable rewards is important to ensure that the child with ASD is motivated to continue with the toilet training process. As explained earlier, choosing a reward that is suitable to the child is important to reinforce any successful attempt. These reward items have to be something motivating to the child, such as his/her favorite toys, foods, drinks, games or watching his/her favorite movies. If suitable, social rewards such as praise or a hug can also be used. Rewards should be reduced systematically once the child has mastered certain skills to achieve total independence in the toileting activity.

Toileting Training Process

The toilet training process can be considered a challenging period for both children with ASD and their parents and/or caregivers as well. It is advisable to continue with the training process for a week and evaluate progress or number of successful attempts made by the child with ASD during that period. If the child has responded positively and made good progress with more successful attempts each day, the training can be continued. If little progress has been made and the child with ASD seems to resist the training, parents and/or caregivers are advised to discontinue the process. Evaluate the level of toileting readiness again and commence the training when the child indicates more toileting readiness skills.

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Quick tips for parents and/or caregivers in toileting activity:

- **Look for the child's sign of readiness for toileting.**
- **Identify the child's baseline skills in toileting.**
- **Prepare simple and suitable pants.**
- **Pants with loose elastic waistband are better than complex and tight-fitting pants.**
- **Break the toileting tasks into smaller step sequences.**
- **Adapt or modify the toilet seat and use stools for the child to rest his/her feet on to avoids the feet dangling, if needed.**
- **Use visual supports to help with understanding. Pictures can be more stimulating to look at than to hear our voice alone.**
- **Praise or reward accordingly for each step mastered by the child to increase motivation.**

☑Avoid too much disappointment during the training process. Stop the training if the child is considered not ready for it yet. You may feel disappointed, but you can always try again another time with better luck when the child seems ready. It is always best to consult with your occupational therapy practitioners for guidance.

Table 2: Quick Tips in Toilet Training

Case Management and Self-Care Activities

The same basic occupational therapy approaches explained above for dressing and toileting activities can be used by parents and/or caregivers of children with ASD in implementing training for other self-care activities such as brushing teeth, washing hands, feeding and bathing. It is advisable to prepare task sequences by breaking down each activity or task into smaller steps. Evaluate the child's basic skills for that particular activity and plan for suitable adaptations or modifications to the task or activity if needed. Choose a suitable reward to enhance the child's skills and to motivate them in performing the task independently. Parents and/or caregivers are encouraged to seek further advice and guidance from occupational therapy practitioners if they wish to implement the suggested training.

Academic Functional Activities

Occupational therapy intervention implemented in the school setting can be quite different from the clinic settings. This is because the aims of an occupational therapy intervention for children with ASD in the school setting are focused on achieving active participation in academic activities such as learning, writing, and performing other academic and school-related activities, including an ability to use equipment and/or materials during the learning process such as scissors, arts materials and writing tools (Burtner, McMain, & Crowe, 2002).

Occupational therapy practitioners work closely with the teachers to facilitate the learning process. A comprehensive occupational therapy assessment of the child's existing skills needs to be performed. Based on the assessment, suggestions are made for suitable adaptations and/or modifications, if needed, either of the task itself and/or the environment, to help the child with ASD to function better in the classroom during the lessons or outside the

classroom. Often, occupational therapy practitioners in school settings will have to work on the child's fine and gross motor functions as well as on their attention skills (Reid, Chiu, Sinclair, Wehrmann, & Naseer, 2006). Various suitable occupational therapy approaches can be suggested to promote active participation in the school setting which may include adaptations and modifications, compensatory methods, visual supports, assistive technology, and sensory strategies to help those with hyper- or hypo-responsiveness towards certain sensory stimuli that may hinder their performances in academic activities (Schaaf, et al., 2014; Van Laarhoven, Kraus, Karpman, Nizzi, & Valentino, 2010).

Leisure and Play Activities

Play is one of the most important occupations for children. There is no exception for children with ASD. Through play, children learn about their environment, expressing their emotions, learning certain social conventions and achieving necessary developmental milestones, both physically and cognitively, as well as learning essential communication skills. However, children with ASD are often reported to have limited ability to play with peers or to play in a socially-acceptable manner (Kossyvaki & Papoudi, 2016). The core features of the ASD condition, which include repetitive patterns of play, insufficient play skills and lack of creativity during play, may hinder the ability of children with ASD to play in a socially-acceptable manner (Boutot, Guenther, & Crozier, 2005; Fragale, 2014).

Adult involvement in promoting play skills can be beneficial to children with ASD in helping them improve their ability to interact with others. Adults may be able to facilitate aspect of play skills by initiating interactions and introducing creative play (Jull & Mirenda, 2010). Organisation of play dates may be one of the ways parents and/or caregivers of children with ASD can encourage successful engagement with typically-developing peers (Frankel, Gorospe, Chang, & Sugar, 2011; Koegel, Werner, Vismara, & Koegel, 2005). Such an arrangement will provide a platform for the child with ASD to socially engage and interact with their typically-developing peers in a more control and structured environment. Study shows that involvement of peers who have been trained how to interact with children with ASD resulted in increased initiations and responses by children with ASD during play (Frankel, et al., 2011; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008). This will also improve acceptance among typically-developing peers towards children with ASD (Frankel, et al., 2011). Other than that, the use of video modeling to promote play skills has often been reported as capable of improving social and interaction skills among children with ASD (Fragale, 2014). This includes increasing their ability to play with toys as their intended function, pretend play and imitation skills.

III. CONCLUSION

Best Practices in Occupational therapy is concerned with the ability of people with ASD to function and actively participate in their activity of daily living skills (ADL) at home, school and in the community. Occupational therapy management for children with ASD includes comprehensive assessments of functional skills and planning for suitable interventions for children with ASD and their families, based on their individual needs. Various approaches and strategies can be implemented by occupational therapy practitioners to facilitate active participation in daily living activities among children with ASD. Parents and/or caregivers are encouraged to be actively involved in the decision-making and intervention process to gain optimum benefits for their children with ASD.

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