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MANAGEMENT OF AUTISM SPECTRUM DISORDER IN PEDIATRIC: A SCOPING REVIEW

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Abstract

About 1 in 59 children have Autism Spectrum Disorder (ASD), and the incidence is rising each. Children with ASD benefit from health promotion and disease prevention, and they have the same fundamental healthcare needs as normal kids. Objective: Finding research interventions for kids with ASD in various healthcare settings was the goal of this study. The PCC (Population, Content, and Context) approach using the Boolean operators "AND" and "OR" was employed in the literature search. Keywords such as Pediatric OR Child AND Autism Spectrum Disorder OR Autism AND Management OR Intervention OR Treatment OR Guideline were used in EBSCO, Clinical Key Nursing, and PubMed databases. The reviewed publications were original research on ASD in children, published between 2009 and 2019. Eight pertinent articles five randomized control trials, two quasi-experiments, and one qualitative study were located through the search. The two primary subjects of these publications were social interaction, communication, and behavioral development. In particular, by teaching parents or other caregivers how to meet the requirements of children with ASD, nurses play a crucial role in managing care for these children.

Keywords: *Pediatric, Autism Spectrum Disorder, Nursing Management*

Introduction

One in 59 children is thought to be affected by autism spectrum disorder (ASD), and this figure rises yearly. ASD is a developmental disease that has an impact on communication and behavior. Because of the great individual variation in both severity and symptoms, autism is referred described as a "spectrum" disorder. While some individuals with ASD diagnoses can carry out daily tasks on their own, others need a lot of assistance with even the most fundamental tasks, like socializing and talking. Communication difficulties, narrow interests, repetitive behaviors, and sensory concerns, such as extreme sensitivity to light, noise, clothes, and temperature, are among the core characteristics of an ASD diagnosis (Straus et al., 2019). The World Health Organization (WHO) reported in 2013 that epidemiological statistics indicated the prevalence of ASD to be one in 160 children worldwide, which accounted for about 7.6 million children with disabilities adjusted for age and 0.3% of the world's overall disease burden. According to estimates, there were approximately 112,000 ASD sufferers in Indonesia in 2012, and 134,000 sufferers, or one in 250 children, were expected to exist in 2015.

The percentage of children with ASD is 62.8%; in 2015, it was 1.28 out of 1000. (Hernawan et al., 2018). Autism Spectrum Disorder (ASD) a spectrum of neurodevelopmental disorders that occur in early childhood is characterized by persistent communication deficits, social interactions, behavioral patterns, interests, or repetitive activities. ASD has lifelong consequences, with various impacts on the health, economic well-being, social integration, and quality of life of individuals with disorders, as well as on their families and potentially society in general (Lin, 2014).

Research has shown that children with ASD exhibit key developmental deficits including: altered social interactions, inability to communicate verbally and nonverbally and repetitive behaviours such as obsessive interests (Sampson & Sandra, 2018). People with ASD and other developmental disorders have the right to achieve optimal health, well-being and functioning and to receive the highest standard of health care without discrimination (WHO 2013). Children with ASD have the same basic health care needs as children without disabilities and can benefit from similar health promotion activities. The purpose of literature review is to identify research interventions for children with ASD in various health care settings. This study reviews the latest literature published in various databases including EBSCO, Clinical Key Nursing and PubMed using key terms relevant to ASD and health service utilization (medical care) to identify potentially relevant articles.

Methods

This research used a non-experimental design method with a scoping review method. Literature search using the PCC (Population, Content and Context) method with Boolean conjunctions "AND" and "OR". The databases used in this literature search are EBSCO, Clinical Key Nursing and PubMed with a search strategy using the keywords Pediatric OR Child AND Autism Spectrum Disorder OR Autism AND Management OR Intervention OR Treatment OR Guideline. As an effort to provide a broad view of the various literature related to interventions used by health workers in dealing with children with ASD. The author conducted a literature search published in the last 10 years in 3 databases, original articles and the author explored scientific articles published in both qualitative and quantitative research.

The criteria for selecting articles found as correspondence have been excluded. Titles and abstracts were screened as a form of identification of research findings. The inclusion criteria in this study were studies with original research, subjects in children with ASD aged 0-17 years and health workers who provide interventions to children with ASD. The exclusion criteria in this study were research articles that were not in full text, did not explain the intervention protocol, or articles that were not written in English. The literature search process is described in the PRISMA chart below:

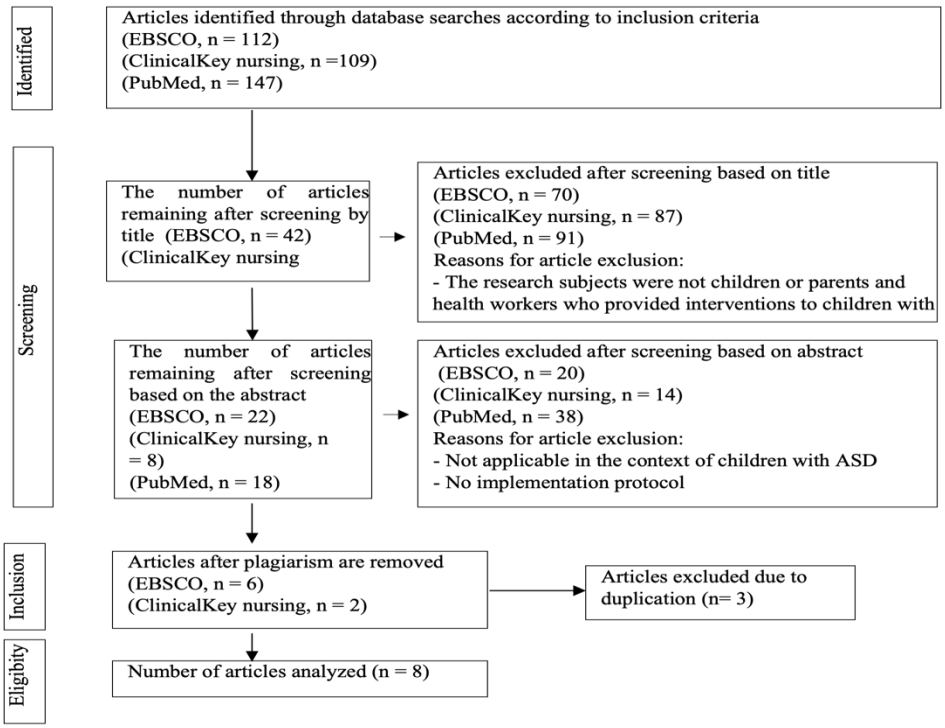

Figure 1. PRISMA flowchart

Table 1. Literature Summary

Author, (Year)	JBI Levels	Country	Design Study	Subject Study	Details Intervention	*Outcomes*
Johnson *et al.*, (2019)	2 (evidence for menaningfulness)	USA	*qualitative*	10 parents with ASD and 10 Healthcare Providers (HCPs)	Participants were interviewed using a series of questions consisting of 6 core questions for parents with ASD and 3 core questions for HCPs. Participants were asked open-ended questions and follow-up questions for clarification or elaboration throughout the process. A co-researcher attended the focus groups, which were audio-recorded throughout.	The meanings attributed to the behavior by mothers and HCPs differed. Mothers attributed the behavior to the child's frustration communication, hyperactivity, and self-soothing. HCPs attributed the challenging behavior to the child's self-stimulation and aggression. Strategies for preventing the behavior also differed. Mothers focused on preparing for hospitalization and efforts to partner with HCPs. HCPs identified fewer strategies and consulted with mothers for strategies to manage challenging behavior.
Voss *et al.*, (2019)	1.c	USA	*Randomized Controlled Trial*	Children aged 6 to 12 years with a formal diagnosis of ASD who are currently receiving applied behavior analysis therapy.	Superpower Glass is a smartphone app that promotes facial engagement and emotion recognition by detecting facial expressions and providing powerful social cues. Families are asked to do 20-minute sessions at home 4 times per week for 6 weeks.	Overall, 71 children (63 boys [89%]; mean [SD] age, 8.38 [2.46] years) diagnosed with ASD were enrolled (40 [56.3%] randomized to treatment, and 31 (43.7%) randomized to control).
Jeanne *et al.,* (2019)	1.c	Canada	*A randomized crossover trial*	Study subjects aged between 12-20 months who were at risk of ASD and referred to community health care services with a regional screening program for ASD from July 2013 to March 2016	A 12-session parent-mediated intervention delivered in the family's home with a therapist, at least one parent (identified as the primary caregiver given that they were present at all 12 sessions) and a child with a diagnosis of or at risk for ASD. All sessions were audiotaped to code parent and child behaviors. Two therapists taught the intervention to 19 families. The primary therapist (n = 16 families, 84%) received training (a three-day workshop) in the use of the Early Start Denver Model (ESDM) (but did not complete ESDM fidelity procedures) and attended a seminar on adapting the Social Communication Emotion Regulation Transaction Support (SCERTS) model. Based on her experience, the primary therapist adapted the parent-mediated intervention and created a comprehensive intervention manual. Another therapist (n = 3 families, 16%) was previously trained in ESDM, and also	The intervention resulted in increased toddler motor skills ($p = 0.005$; ES = 0.60) and a trend toward increased social adaptive behavior ($p = 0.053$; ES = 0.45) compared to the Waitlist group. There was also a trend toward increased parent-child engagement during the intervention ($p = 0.010$; ES = 0.77).

					received training by the primary therapist to ensure the reliability of the adapted parent-mediated intervention.	
Grahame *et al.*, (2015)	1.c	New York	*Randomized Controlled Trial*	Parents with children with ASD aged 3-7 years 11 months with a clinical diagnosis of ASD.	The intervention focused on helping parents understand lower and higher level Restricted and Repetitive Behaviours (RRBs), identifying potential developmental and environmental factors that may trigger RRBs for their child, and teaching parents to use a functional analytic approach to plan appropriate behavioural strategies that are effective for their child and family. Functional analysis helped parents understand their child's RRBs, where and how to intervene to manage these specific behaviours. Each parent was also provided individual support (weeks 2 and 6) to further define and review one of their chosen target RRBs. Parents recorded the target behaviours at home. These target behaviours were a focus for parents to practice the new skills they were learning ensuring that strategies were tailored individually to each child, for example reinforcing other desired behaviours.	This study has demonstrated that the Managing Repetitive Behaviours (MRB) program is acceptable to parents and feasible to implement. Estimates of variability in outcome measures indicate substantial gains in parent self efficacy and suggestive improvements in overall functioning for the child including improvements in target RRBs in the direct intervention group. A multi-site trial is now needed to establish the effectiveness of this intervention, which should be powered to examine potential moderators and mediators of treatment effects.
Chebuhar *et al.*, (2013)	2.c	Lowa, USA	*Quasy eksperimenta l design*	Staff members in the hospital unit consisting of doctors, nurses, obstetricians, medical assistants with a total of 17 participants	The picture schedules used for this project were designed by the first, third, and fourth authors specifically for medical settings, including medical clinics, dental clinics, and hospital units. Various sites, such as a casting room, x-ray area, and laboratory, were depicted. The photographs were taken of two volunteer actors performing the steps of each procedure. One volunteer acted as the patient while the other acted as the health care professional. Typically four to six photographs comprised the picture schedule for each procedure. Each step of each procedure was carefully staged so that the child with autism would not be distracted by other objects in the photograph. The photographs were replicated, laminated, and labeled with the appropriate procedure.	87.5% of staff and 77.8% of parents/caregivers felt that the picture schedule reduced the child's anxious behavior. Only one staff member felt that the picture schedule was ineffective. The majority of parents/caregivers (77.8%) thought that the intervention helped make the overall experience more tolerable for the child with anxiety.
White *et al.*, (2013)	1.c	USA	*Randomized Controlled Trial*	Sample of 30 adolescents aged 12-17	Multimodal Anxiety and Social Skills Intervention (MASSI) is a manual-based, modular	Nine of the 15 MASSI participants showed improvement (i.e., RCI > 1.96 On the child and adolescent symptom

				years with ASD. Adolescents also had to have a verbal IQ of 70 or higher and no previous diagnosis of intellectual disability. Concomitant psychiatric medications were permitted if the dose was stable for at least 4 weeks with no planned changes during the duration of the randomized trial.	treatment intervention program delivered through three modalities of individual therapy (up to 13 sessions), group therapy (skills practice, 7 sessions), and parent education and coaching (after each individual therapy session). Individual therapy sessions are approximately 60-70 minutes in length, with parent inclusion toward the end of each session for approximately 15 minutes. Group meetings are 75 minutes each. Each participant has a self-identified clinician for individual therapy sessions; this therapist also co-leads the participant's group sessions. Thus, for each group of three MASSI participants, there are two therapists.	inventory (CASI-Anx), four MASSI participants showed clinically significant changes. In the treatment group, there was a 16% increase in SRS scores, compared with a 1% increase in the WL group. The four MASSI participants who experienced significant improvement on the CASI-Anx also made significant improvements on the social responsiveness scale (SRS).
Lim & Draper, (2011)	2.c	Texas, Amerika Serikat	*Quasy experimental design*	The subjects were 22 preschool children aged 3-5 years. In this study, 3 participants were 3 years old, 9 participants were 4 years old, and 10 participants were 5 years old. Seventeen boys and 5 girls participated.	Music as part of speech and language development training of children with Autism Spectrum Disorders (ASD). Randomly assigned a set of target words for each of 3 training conditions: (a) music inserted ABA VB, (b) speech (ABA VB) and (c) no training.	Music and speech training had a significant effect on verbal operant production compared to the control condition without training. VPES scores for music training were higher than for speech training, but the difference was not significant.
Wong & Sun (2010)	1.c	China	*Randomized Controlled Trial*	Subjects in children with ASD with 50 respondents. Generally ranging from 3 to 11 years of age with inclusion criteria for children having comprehensive neurological and developmental disorders.	Children were randomized into two groups: intervention and control. The intervention group was given ztongue Acupuncture (TAC) treatment (40 sessions over 8 weeks). The control group received regular acupuncture. (sham). TAC was applied to 5 specific acupuncture points on the tongue daily by Dr. Sun using sterile disposable 0.3-4 cm acupuncture needles (made in China). The total acupuncture procedure lasted <15 seconds. No sedation was required. The child was seated on the mother's lap with the head tilted approximately 45 degrees upwards with the counteracting. For the control group with sham	There were improvements in both the treatment and control groups on all measures measured but more so in the treatment group than in the control group: (1) eye-hand coordination, performance, and practical reasoning Griffiths Mental Development Scales; (2) sensory-motor, social, affective, language, and total scores Ritvo-Freeman Real Life Scales; (3) language age comprehension on the Reynell Language Development Scales; and (4) Total and Mental Age scores on the Symbolic Play Test. The only statistically significant improvements in the treatment compared to control group were seen in the self-care and cognition domains of the Functional Independence Measure for Children.

			acupuncture, sterile acupuncture needles were applied to five sham points on the tongue. The five points were the same as those used in the intervention group. The procedure was the same with the only difference being that the practitioner used the rough tip of the acupuncture needle to touch the five points instead of using the sharp tip to prick into the tongue.

Results

Eight current studies focusing on therapies to minimize problems in children with ASD were found through a search of many databases. These investigations comprised one qualitative research, two quasi-experimental designs, and five randomized control trials. According to Sampson & Sandra (2018), who described the findings into two major themes, children with ASD frequently exhibit serious developmental difficulties, such as poor social interactions (both verbal and nonverbal communication) and repetitive behaviors, like obsessive interests. The following table provides a summary of these findings.

Table 2. Main Theme Components

Component	Author, (year)	*Finding*
a. Behavioral development	Jeanne *et al.*, (2019)	Parental involvement in The Early Start Denver Model and the Social Communication Emotion Regulation Transaction Support interventions resulted in improved motor skills and increased adaptive social behavior in children with ASD.
	Johnson *et al.*, (2019)	Collaboration between health care providers (HCPs) and parents can lead to strategies to improve support for children with autism spectrum disorders in the hospital and reduce frustration and challenging behavior.
	V. C. Wong & Sun (2010)	TMC, especially acupuncture, has properties in improving various aspects of development and behavior of children with ASD.
b. Social interaction and communication	Voss *et al.*, (2019)	Digital interventions can be used to improve the social behavior of children with ASD.
	Grahame *et al.*, (2015)	This research intervention program focuses on improving the social skills and communication of children with ASD and can be accepted by parents to be implemented in children's learning programs.
	James *et al.*, (2015)	Music therapy combined with Applied Behavior Analysis Verbal Behavior (ABA VB) training can be used as a training process for ASD children to improve children's communication development training.
	Chebuhar *et al.*, (2013)	This intervention demonstrates how a picture schedule for medical settings can relieve anxiety in children with autism and suggests that

	this approach should be used as an innovative way to interact with other autistic patients.
White *et al.*, (2013)	Multimodal Anxiety and Social Skill Intervention (MASSI) can reduce anxiety and can be used as a proper treatment for children with ASD and experienced significant improvements in the social responsiveness scale (SRS).

Discussions

According to Medavarapu et al., (2019) people with autism experience disorders in social interaction and communication. The theory behind using therapy related to improving communication in children is a certain process that occurs in the improvisation of their abilities that can help people with ASD to develop their capacity and social interaction and communication skills. As several studies have described that there are many interventions that can be done on children with ASD such as helping in the process of developing behavior and increasing the strengthening of communication and social interaction. One of the studies related to social interaction and communication is music therapy. According to James et al., (2015) the use of music professionally and its elements as interventions in medical, educational, and everyday environments with individuals, groups, families, or communities seeks to optimize quality of life and improve physical, social, communicative, emotional, intellectual, and spiritual health and well-being in children with ASD.

One of the studies involved in the behavioral development component is the use of traditional Chinese medicine (TMC) V. C. Wong & Sun (2010) such as acupuncture which can improve various aspects of the development and behavior of children with ASD. This is in line with the theory explained by Wong (2009) that acupuncture is essentially a skill learned through years of experience and practice like any surgical technique through personal trial and error. Thus, it is difficult to standardize acupuncture skills across centers in conducting multicenter trials. According to Dunlap (2018), individuals with ASD interpret the world in extraordinary ways, which can contribute to communication challenges. The burden is on nurses to understand them just as they must try to understand the "normal" world. The goal of ASD management is to maximize functionality, improve quality of life, and promote independence.

Nurses are an important part of this process. Advocacy and resource sharing improve access and health care, reducing health disparities for those with ASD. The same thing was explained by Hernawan et al., (2018) who stated that hospital care for children with ASD requires knowledge of the disorder, patience, and a lot of creativity from a nurse. Even seemingly simple tasks, such as assistance with feeding, dressing and bathing, and first aid, can be challenging, as new environments and changes in routine cause these children stress or even terror. Regular nursing care is needed to help these children cope. In addition to nurses, involving caregivers and family members in services is essential for children with ASD, both to increase opportunities for teaching and skills across settings, and to assist in the decision-making process for interventions (White & Tech, 2012). As research in the social interaction and communication component of Chebuhar et al., (2013) revealed that health care providers and parents/caregivers found picture schedules to influence maladaptive interactions in children with autism.

Conclusions

Individuals with autism spectrum disorder (ASD) face significant challenges in social interaction and communication, which can be addressed through various interventions. It has been demonstrated that therapies like music therapy that focus on improving social and communication skills increase the general well-being and quality of life of kids with ASD. Furthermore, although standardizing such interventions is still difficult, unconventional therapies like acupuncture have shown advantages in behavioral development. By offering individualized care, standing up for patients, and assisting families in making decisions, nurses play a critical role in controlling ASD. Their expertise, tolerance, and inventiveness are crucial in assisting kids with ASD in adjusting to new situations and routines. Incorporating family members and caregivers into intervention techniques also enhances results and reinforces learning in various contexts.

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