**Literature Review**

A comprehensive examination of recent literature on Autism Spectrum Disorder (ASD) illuminates critical facets of this complex condition. Genetic studies have underscored the high heritability of ASD and highlighted the variability within normal development, emphasizing the importance of understanding specific genes contributing to susceptibility [1]. Concurrently, research has focused on mobile applications tailored for ASD, acknowledging their significance in clinical settings. Evaluations of existing mobile apps for ASD have proven pivotal, guiding clinicians and families toward evidence-based interventions [2]. Notably, interventions like the Puzzle Walk app and tablet apps from Open Autism Software have demonstrated the potential of technology in enhancing physical activity and social interactions among individuals with ASD [3][4]. Furthermore, participatory design approaches have yielded educational mobile apps that are instrumental in improving numeracy skills, emphasizing the necessity for tailored tools in addressing diverse ASD needs [5].

Studies delve into innovative methods for ASD interventions, including Applied Behavior Analysis (ABA) techniques like Discrete Trial Instruction (DTI), mand training, and Natural Environment Teaching (NET). These approaches have provided valuable insights into effective teaching methodologies for individuals with ASD, particularly within inclusive school settings [6]. Moreover, environmental factors have come under scrutiny, revealing possible links between pollutants, advanced parental age, older siblings with ASD, and increased risk for autism [7]. This knowledge underscores the multifaceted nature of ASD, necessitating holistic interventions that consider both genetic predispositions and environmental influences.

The integration of Information and Communication Technology (ICT) in ASD interventions has marked a significant stride. Recent reviews have highlighted the importance of early development interventions, focusing on imitation and joint attention, facilitated by robotics and interactive applications [8]. Categorized into diagnostic tools, intervention tools, and mobile apps, these technological advancements represent a beacon of hope. Notably, Augmentative and Alternative Communication (AAC) tools like Picture Exchange Communication System (PECS) have showcased positive outcomes, improving communication skills and aiding in adapting to normal life [9]. As technology continues to evolve, these findings underscore the transformative potential of innovative interventions, offering promise for individuals with ASD and their families in navigating the challenges associated with the disorder.

|  |  |  |
| --- | --- | --- |
| Sr No | Paper No | Name |
| 1 | 1 | Autism Spectrum Disorders By Catherine Lord ‡ Edwin H. Cook, Bennett L. Leventhal, and David G. Amaral |
| 2 | 2 | Smartphone Apps for Autism Spectrum Disorder—Understanding  the Evidence  Jung Won Kim1 & Thuc-Quyen Nguyen2 & Shih Yee-Marie Tan Gipson3 & Ah Lahm Shin1 & John Torous4 |
| 3 | 3 | Puzzle Walk: A Gamified Mobile App to Increase Physical Activity in Adults with Autism Spectrum Disorder |
| 4 | 4 | Evaluation of Tablet Apps to Encourage Social Interaction  in Children with Autism Spectrum Disorders  Juan Pablo Hourcade, Stacy R. Williams, Ellen A. Miller, Kelsey E. Huebner, Lucas J. Liang |
| 5 | 5 | Development of a Mobile App to Improve Numeracy Skills of Children With Autism Spectrum Disorder: Participatory Design and Usability Study Theoneste Ntalindwa 1 , MSc; Mathias Nduwingoma1 , PhD; Evariste Karangwa 2 , PhD; Tanjir Rashid Soron3 , MD, MPH, MSc; Alphonse Uworwabayeho1 , PhD; Annette Uwineza4 , MD, PhD |
| 6 | 6 | Applied Behavior Analysis: Its Application in the Treatment of Autism and Related Disorders in Young ChildrenSandra L. Harris, PhD Professor of Clinical Psychology Graduate School of Applied and Professional Psychology Lara Delmolino, PhD Research Assistant Professor Douglass Developmental Disabilities Center Rutgers, The State University of New Jersey New Brunswick, New Jersey |
| 7 | 7 | Children with Autism Spectrum Disorder and Patterns of  Participation in Daily Physical and Play Activities  Amir Hossein Memari,1 Nekoo Panahi,1 Elaheh Ranjbar,1 Pouria Moshayedi,2  Masih Shafiei,1 Ramin Kordi,1 and Vahid Ziaee3 |
| 8 | 8 | MISE AU POINT/ IN-DEPTH REVIEW AUTISM IN REVIEWSimone KHALIFEH1,2,3, Walid YASSIN2,3, Silva KOURTIAN2,3,4, Rose-Mary BOUSTANY1,2,3, |
| 9 | 9 | Features of Mobile Apps for People with Autism in a Post COVID-19 Scenario: Current Status and Recommendations for Apps Using AI Ikram Ur Rehman 1 , Drishty Sobnath 2 , Moustafa M. Nasralla 3 , Maria Winnett 1 , Aamir Anwar 1 , Waqar Asif 1 and Hafiz Husnain Raza Sherazi 1, |
| 10 | 10 | Assisting Children with Autism Spectrum Disorder with Educational Mobile Apps to Acquire Language and Communication Skills: A Review Azham Hussain (\*) Universiti Utara Malaysia, Sintok, Malaysia hussazham@yandex.com Emmanuel O.C. Mkpojiogu Universiti Utara Malaysia, Sintok, Malaysia Veritas University, Abuja, Nigeria Pauline Chiamaka Okoroafor Veritas University, Abuja, Nigeria |
| 11 | 11 | INCREASING COMMUNICATIVE INTERACTIONS OF YOUNG CHILDREN WITH AUTISM USING A VOICE OUTPUT COMMUNICATION AID AND NATURALISTIC TEACHING MAUREEN M. SCHEPIS FAMILY, INFANT, AND PRESCHOOL PROGRAM AND WESTERN CAROLINA CENTER DENNIS H. REID CAROLINA BEHAVIOR ANALYSIS AND SUPPORT CENTER AND LOUISIANA STATE UNIVERSITY MEDICAL CENTER MICHAEL M. BEHRMANN GEORGE MASON UNIVERSITY AND KELLY A. SUTTON WESTERN CAROLINA CENTER FOUNDATION |
| 12 | 12 | Interventions for Children With Autism Spectrum Disorders in Inclusive School Settings Lynn Koegel, Rosy Matos-Fredeen, Russell Lang, and Robert Koegel, University of California, Santa Barbar |
| 13 | 13 | Interactive Technologies for Autistic Children: A Review Sofiane Boucenna, Antonio Narzisi, Elodie Tilmont, Filippo Muratori, Giovanni Pioggia, David Cohen & Mohamed Chetouani |
| 14 | 14 | Autism Children’s App based intervention |
| 15 | 15 | Applications for Children with Autism in Preschool and Primary Education Maria Xanthopoulou (\*), Georgia Kokkalia, Athanasios Drigas National Center for Scientific Research-Demokritos, Attica, Greece maxanthopoulou@yahoo.com |
| 16 | 16 | Autism Children’s App using PECS Nareena Soomro1, \* and Safeeullah Soomro |
| Paper  No | Survey | |
| 1 | Genetics of autism and identification of specific genes - High heritability and variability within normal development | |
| 2 | Study examines mobile apps for Autism Spectrum Disorder (ASD) - Assessing evidence for ASD apps is critical for clinicians and families. Examined available mobile device-based applications for ASD - Reviewed evidence for commercially available mobile device apps for ASD | |
| 3 | Puzzle Walk app developed to increase physical activity in adults with ASD - Incorporates behavior change techniques and gamification elements | |
| 4 | Study on tablet apps for social interaction in children with ASDs - Apps from Open Autism Software increased positive social interactions | |
| 5 | Participatory design approach used to develop mobile app - App improves numeracy skills of children with ASD. Literature review explored existing mobile apps - Literature review compared previous studies for app design | |
| 6 | Autism is a disorder characterized by deficits in social communication and repetitive behaviors. - The genetics of autism is an area of significant research, with evidence of high heritability and potential genetic variations contributing to susceptibility. | |
| 7 | ABA methods used to educate children with autism - DTI is an effective teaching approach for autism.DTI is an effective teaching approach for individuals with autism. - Mand training and NET are contrasted with DTI. | |
| 8 | Low rate of physical activity in children with ASD - Gender, income, and household structure associated with activity scores.Age and gender differences in physical activity levels - Autism Treatment Evaluation Checklist (ATEC) used to monitor severity of symptoms | |
| 9 | Research suggests a possible link between environmental pollutants and autism. - Advanced parental age and having an older sibling with ASD are risk factors for autism | |
| 10 | Study analyzes existing mobile apps for people with ASD - Identifies common features and recommends enhancements using AI. 52 articles and technical reports were selected. - Common issues considered: social interactions, repetitive behavior, verbal/non-verbal interactions | |
| 11 | Review of literature on autism and educational mobile apps - Educational apps effective in helping autistic children acquire language and communication skills. The literature review explores theories related to autism spectrum disorder. - It discusses the use of educational mobile apps for children with ASD. | |
| 12 | VOCA and naturalistic teaching increased communicative interactions in children with autism - No negative effects of VOCA use on other communicative behaviors. Summary of research-based interventions for students with ASD - Focus on interventions in inclusive school settings | |
| 13 | Summary of research-based interventions for students with ASD - Focus on interventions in inclusive school settings | |
| 14 | Review of recent ICT applications for autism treatment - Focus on early development of imitation and joint attention in children with autism and roboticsOverview of recent ICT applications for ASD treatment - Focus on early development of imitation and joint attention in children with ASD and robotics | |
| 15 | Focus on applications for children with Autism Spectrum Disorder (ASD) - Categorized into Diagnostic Tools, Intervention Tools, and Mobile Apps | |
| 16 | Autism app using PECS improves communication in children - Positive impact on adapting to normal life. | |