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Preschool teachers' implementation of evidence-based practices for children with autism spectrum disorder: an investigative study

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ABSTRACT

The study explored preschool teachers' evidence-based practices when teaching students diagnosed with autism spectrum disorder (ASD). The sample included 76 preschool teachers from different regions of the Kingdom of Saudi Arabia (KSA), including Tabuk, Eastern Province, Makkah Al-Mukarramah, Riyadh, and Asir, who teach in inclusive classrooms with students with ASD. The primary instrument was a 28-item, structured questionnaire designed to assess the extent of teachers' implementation of evidence-based practices (EBPs). The results showed that the total degree of the sample teachers' evidence-based practices was moderate. Positive reinforcement was the most used practice, while antecedent-based interventions and behavioral momentum (high-probability request sequence) interventions were the least used. In addition, no significant differences were observed in teachers' evidence-based practices with ASD students due to the duration of years of teaching experience and academic qualifications at the 0.05 significance level. Teachers need to be provided with more focused in-service training that increases teachers' professional development to improve their knowledge and skills. The study confirms the existing research gap on the utilization of EBPs in early childhood education and offers data-based insights to policymakers and practitioners in inclusive education.

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that is usually apparent in early childhood. Children with ASD display a variety of social and communicative deficits. They also show restricted and repetitive behaviors and/or interests, which have a negative impact on their ability to perform day-to-day tasks and to learn in school (American Psychiatric Association, 2025; Hamdan, 2022). Some of the symptoms show in early childhood and some symptoms can take longer to show still persist across multiple developmental phases. They affect the child's ability to function adaptively and impact their daily routines and behaviors. ASD is diagnosed in 1-31 eight-year-old children in the USA according the evaluation by the Centers for Disease Control and Prevention, CDC (2025). These numbers indicate a rise in the number of diagnoses and an increase in the blown up awareness of the disorder. These traits also demonstrate the importance for the implementation of adequate and specialized teaching strategies. This is especially the case in early childhood education. One of the highly regarded strategies is Evidence-Based Practices (EBPs). These strategies enhance social interactions, communicative and behavioral, and academic skills of children diagnosed with ASD (CDC, 2025).

Educational professionals who work with children with ASD are expected to utilize evidence-based practices, since studies support that individualized, quality, evidence-based strategies build positive development in a child's social, communicative, behavioral, and academic skills (Steinbrenner et al., 2020). Evidence-based practices are deemed empirically supported, therapeutic, and instructional interventions that

guide educators in making instructional choices, as opposed to relying on unsubstantiated, personal, and subjective beliefs (Odom et al., 2015; IRIS Center, Vanderbilt University, 2025). Multiple systematic reviews illustrate a range of effective practices (Steinbrenner et al., 2020; IRIS Center, Vanderbilt University, 2025). Examples of effective practices that are reported to build social, communicative, and behavioral skills of children with Autism Spectrum Disorder (ASD) include reinforcement, modeling, visual supports, and naturalistic interventions. These practices coupled with other instructional strategies, individualized to children with ASD, improve academic achievement, behavioral regulation, and social-communicative skills.

Studies show that structured intervention should be initiated early, and also show that as children begin to acquire language, social, and self-help skills, this intervention becomes crucial (National Research Council, 2001). Educational research has documented the great efficacy of certain techniques, including, but not limited to, applied behavioral analysis, visual supports, social stories, modeling, and structured teaching, and these also tend to be the most common and most influential interventions for children with ASD (Wong et al., 2015).

The success of evidence-based practices (EBPs) depends on the training, competence, and devotion of teachers, who are a deciding factor in the effective execution of EBPs (Hume et al., 2021). Also, since inclusive education entails the placement of children with special needs in general pedagogy classes, flexible and adaptable use of EBPs in teaching practices of mainstream teachers has to be promoted (Florian & Black-Hawkins, 2011; UNESCO, 2017). Additionally, preschool teachers are a key element in the system of inclusive education; therefore, they need to be equipped with effective and evidence-based teaching methods to offer quality education to children with ASD (Odom et al., 2010; Wong et al., 2015).

Despite teachers' attempts to integrate evidence-based practices (EBPs) in their teaching, they are hindered by various factors, such as the lack of instructional materials, the absence of school-based professional development, and the absence of instructional coaching. These obstacles contribute to the inconsistent use of EBPs in classroom settings. Thus, enhancing teachers' knowledge on the use of EBPs and the teaching of other practices is vital to better the educational outcomes of children with Autism Spectrum Disorder (ASD), and to meet the objectives of inclusion (Cook & Odom, 2013; Hsiao & Sorensen Petersen, 2019).

The description of the origins of evidence-based practice (EBP) comes from the evidence-based movement in medicine, particularly thinking of British researcher Archie Cochrane, who advocated for one of the first evidence-based approaches in which medical guidelines are based on systematic reviews of scientific evidence. This led the way to the formation of research networks, such as the Cochrane Collaboration, which reviews medical evidence (Stavrou et al., 2014; Cochrane.org, 2023). This practice went on to be applied in other disciplines such as psychology and education, in which the practice of scientifically evaluating one’s interventions and then making decisions based on the evidence as opposed to solely relying on clinical or educational experience or tradition, has become common practice (Odom, 2013). However, when generalizing and applying this to the domain of Autism Spectrum Disorder (ASD), numerous recommendations have been thoroughly synthesized and categorized as scientifically acceptable, which has resulted in the emergence of more detailed methodologies for identifying and classifying scientifically based recommendations, having incorporated thorough systematic reviews of thousands of studies that meet established scientific standards, thereby identifying effective interventions. (Odom et al., 2010). In recent years, more evidence-based practices have been developed, been more widely available, and been more widely recognized by educators, school administrators, and researchers to ensure that students are subject to pedagogical interventions and strategies that have proven efficacy in empirical research, thereby increasing the effectiveness of the educational process (Ecker, 2016; Wang & Lam, 2017; Russo-Campisi, 2017).

The descriptions for EBPs tend to vary, some describe them as therapy/instruction programs with documented high-quality research (Torres et al., 2014; Cook & Odom, 2013; Harris et al., 2012). that show a positive change in student outcome(s).

These research studies have to meet strict requirements set in the study design, number of studies, quality of the research, and the size of the effect (Courtade et al., 2015; Cook & Cook, 2013; Cook et al., 2016). According to the National Professional Development Center on Autism Spectrum Disorders (NPD-ASD, 2014), there are minimum requirements on the number and types of research studies that support evidence-based practices for children with ASD. There are a minimum of 2 peer-reviewed, randomized or quasi-experimental study designs that are considered high quality. For evidence-based practices to be established for children with ASD and single-case designs, it is required that 3 different researchers or research teams conduct 5 high-quality single-case studies. For evidence to be considered combined, there must be 3 different researchers or research teams that conduct 1 high-quality group design study and 3 high-quality single-case studies.

From the National Clearinghouse on Autism Evidence and Practice (NCAEP), 28 instructional and behavioral practices are considered Evidence-Based Practices (EBPs) in Autism Spectrum Disorder (ASD). EBPs include practices and strategies like reinforcement, modeling, discrete trial training (DTT), social skills training, naturalistic approaches, and peer-assisted instruction, among others. These practices are based on systematic review and multiple experimental analyses (Steinbrenner et al., 2020). These practices can be grouped into: 1. Behavioral Practices, like DTT, positive reinforcement, and other strategies that are part of Applied Behavior Analysis (ABA) and Functional Communication Training (FCT). 2. Naturalistic Developmental Behavioral Interventions (NDBI), such as the Early Start Denver Model (ESDM), which uses behavioral analysis and developmental strategies to foster communication and social interactions through play (Sandbank et al., 2023). 3. Parent-Mediated Interventions: training parents to adopt specific communication and behavioral approaches and thus ensuring consistency between the home and the intervention center (Hampton & Kaiser, 2016). 4. Interventions using Augmentative and Alternative Communication (AAC), like the Picture Exchange Communication System (PECS), and tablet communicators that enhance the ability to communicate non-verbally. 5. Cognitive and Behavioral Therapy (CBT) are also useful to address anxiety and depressive disorders in adolescents with ASD, who can express themselves verbally (Chung et al., 2024).

Recent studies show that the development of scientific based intensive early interventions have proven effective for improving the overall cognitive and social functioning for children affected with Autism Spectrum Disorder (ASD) (Hume et al., 2021). Furthermore systematic reviews suggest that the combination of developmental along with behavioral interventions is more effective than focusing on only one (Sandbank et al., 2023). There are various ways that evidence-based practice (EBP) have been classified and one of the best known is that of the National Autism Center (NAC, 2017). The NAC has classified the EBPs of children with ASD into the following categories: 1. Established: interventions that have proven to be effective and helpful. 2. Emerging: these are interventions that there is some evidence to suggest that they are effective; however, there is a need for more studies to determine their overall effectiveness. 3. Unestablished: there are no conclusive evidence to determine effectiveness. 4. neffective/Harmful: these are interventions that studies show are either ineffective or are likely to have adverse or harmful effects (Ferreri, Witmer, & Shivers, 2016)

Multiple recent studies have focused on evidence-based practices (EBPs) for children with autism spectrum disorder (ASD) and their application by teachers within the special education profession. The subsequent paragraphs will summarize these studies.

A systematic evaluation study was done by Pruneti, Coscioni, and Guidotti (2024) using randomized controlled trials and quasi-experimental designs. They analyzed several behavioral interventions for children with ASD (Autism Spectrum Disorder) and used the following protocols: Picture Exchange Communication System (PECS), Discrete Trial Training (DTT), Early Start Denver Model (ESDM), Pivotal Response Training (PRT), and the TEACCH (Treatment and Education of Autistic and Communication-Handicapped Children) program. Most described interventions succeeded in advancing social communication, language, behavioral, and adaptive functioning. TEACCH and

other Naturalistic interventions were shown to be especially useful with adaptive skill and overall language development, as well as communication enhancement. The effects of the described interventions were shown to be a function of the child's age and how the intervention was implemented, optimizing the described interventions. The authors recommended more reliable studies with the purpose of optimizing the use of described interventions in varying contexts.

Al-Zahrani and Al-Shafi'i (2020) conducted a descriptive survey study on the application of evidence-based practices by teachers in ASD programs in Jeddah. Out of the 300 teachers from public and private programs who constituted a purposive sample, the study found that the participants implemented the practices listed in the instrument to a high degree, with the strategies most frequently used, such as reinforcement, task analysis, modeling, and prompting. Concerning academic qualifications, the study found Master's degree holders in special education to be more favorable than others. However, this was not the case for gender, years of experience, and education.

The purpose of Mutua's (2019) study was to determine the most prevalent evidence-based practices (EBPs) and non-evidence-based practices (non-EBPs) used for students with autism spectrum disorder (ASD) and to describe the barriers teachers faced when trying to use EBPs. The use of DTT (Discrete Trial Training) and task analysis was reported by 79. 7% of study participants, 78% reported using reinforcement, and 60% were using PECS (Picture Exchange Communication System). About 40% of the respondents said they had not received any training on EBPs during the 2018/2019 school year, and 35% of the trainers said the training was not helpful.

Aukes (2018) analyzed how the level of teaching experience influenced teachers' understanding of the 27 EBPs, as well as their skills and practices, created by the National Professional Development Center on Autism Spectrum Disorders. The study had a quantitative descriptive correlational design and was conducted in 14 educational districts in Iowa with 228 surveyed special education teachers. 48 of the participants were novice teachers (less than 3 years of experience) and 180 were experienced teachers (more than 3 years). The study identified a positive correlation between years of teaching experience and the knowledge ($r = .26$, $p = .001$), implementation ($r = .22$, $p = .001$), and level of skill ($r = .26$, $p = .002$), which means that teachers with longer experience had better knowledge and use of EBPs for students with ASD.

Klebanoff (2018) examined school psychologists' and counselors' perspectives on the use and training of EBPs, their attitudes toward the EBPs, and the barriers to implementing them with students with ASD. In this study, using a descriptive design and collecting data through surveys and interviews, it was found that the majority of the participants expressed positive attitudes toward the EBPs and interest in further training, as well as the current use of EBPs with students with ASD.

It can be concluded that there is a growing motivation toward EBPs in teaching children with ASD in regard to the effectiveness of intervention and the knowledge and the implementation on the part of the teachers within the classroom. It was found that, of PECS, DTT, ESDM, PRT and TEACCH, the ones that are considered to be of the greatest importance for the improvement of social, communicative, behavioral, and adaptive functioning were varying by age and context, and therefore it was suggested that more studies of a comparative nature of greater quality were needed.

Local and international research from an applied perspective show that teachers' knowledge and usage of EBPs different based on their experience, training, and academic qualifications. Al-Hussain (2021) noted that EBP usage was modest, with professional development attendance being correlated to EBP use. Al-Shafi'i and Al-Zahrani (2020) reported that the most commonly used strategies were reinforcement, task analysis, modeling, and prompting, and that academic qualifications had an influence on this while gender and years of experience were insignificant factors.

Mutua (2019) detailed the challenges in the practical application of evidence-based practices (EBPs) and stated that nearly 40% of educators claimed they had had insufficient training in the practices and that the training offered was often viewed as ineffective. Interestingly, Aukes (2018) showed that the number of years of experience a teacher has is positively correlated to that teacher's knowledge and application of EBPs, suggesting that

a teacher's professional experience enhances the use of such practices. In addition, Klebanoff (2018) stated that school psychologists and counselors, in general, had a favorable view of EBPs and wanted to be trained further, although they cited a lack of time and training as the main barriers to the greater use of EBPs.

There seems to be agreement on the effectiveness of behavioral EBPs; however, there seems to be a disconnect between the teachers' understanding of the theory and its practical application in the school context. It seems that there are issues related to the framework, professional training, and the availability of resources. This points to the urgency needed to initiate the Professional Development support that is needed on the ground to aid teachers in applying EBPs more effectively in the EBP framework for children with Autism Spectrum Disorder.

Statement of study: Specialized educational programs based on evidenced-based practices (EBPs) have proven to be of remarkable success in serving students with disabilities, especially, those in the autism spectrum, because of the integrity of the research upon which the most effective instructional strategies are identified (Courtade et al, 2015). When teachers are trained on the practices, their effectiveness as educators is further increased, which in turn increases the level of the positive effect of the practices on the students (Farley et al., 2012). Evidence also shows that EBPs have positive outcomes for almost 95% of students, while other educational programs have success rates lower than 50% (Cook, 2008). While research overwhelmingly supports the use of EBPs with students with ASD, the most recent studies indicate that research knowledge does not equate to implementation in the classroom. For example, Stahmer et al (2024) state that the use of EBPs is most prevalent when teachers are in a positively supportive organizational structure which shows that the application of evidence based practices lacks in most school settings. Reports by Almughyiri (2023) state that teachers often have a large gap between their knowledge and actual implementation of EBPs, while Alotaibi (2022) found that, with some practices being used frequently, teachers also reported that there were a number of constraints in their application of EBPs.

The integration of children with disabilities into preschool programs is part of a global trend toward more inclusive education policies (Nienke et al., 2009; Samuel et al., 2009). Researchers and policy makers have attempted to develop instructional programs that balance quality assurance for all children with the rights of children with disabilities (Al-Naqeeb, 2012). According to Grattan (2017), preschool children with Autism Spectrum Disorder (ASD) gain the most from a preschool teacher's knowledge of Evidence-Based Practices (EBPs) and their proficient, good, or poor implementation. Since children receive a variety of educational services, schools serve as a primary avenue for the adoption of autism-focused EBPs (Klebanoff, 2018).

Dissemination of autism-specific EBPs (Klebanoff, 2018). Given this, an objective of this study is to ascertain the degree of utilization of evidence-based practices (EBPs) by preschool teachers for students with Autism Spectrum Disorder (ASD). Most of the previous studies are of the opinion that there are not many studies that consider the use of EBPs by preschool teachers working with children with ASD in the Kingdom of Saudi Arabia, thereby rationalizing the current study in the local setting. In this regard, the current study tries to respond to the following research questions: (1) What is the level of preschool teachers' utilization of evidence-based practices with children with autism spectrum disorder in the Kingdom of Saudi Arabia? (2) Are there statistically significant differences at the $\alpha = 0.05$ level in the degree of preschool teachers' utilization of evidence-based practices with children with autism spectrum disorder attributable to the following variables: years of experience with children with ASD, academic qualification, and type of supervisory authority (public/private)?

METHODS

Study Design

To explore the level of implementation of evidence-based practices (EBPs) by preschool teachers in relation to children with Autism Spectrum Disorder (ASD), the study employed a descriptive survey research methodology. In this case, the methodology employed gives the researcher the chance to obtain data on specific practices of the teachers involved in the instruction,

and in this case, the methodology focuses on obtaining and describing the data of the phenomenon without manipulation of the environment and/or surroundings of the study. In describing the methodology, the researcher intends to focus first on the level of EBP and second, on examining the knowledge and competency levels of teachers and other circumstantial variables (lack of knowledge in the area of ASD, lack of years of service in teaching children with ASD and lack of teaching qualification) that may influence the described praxis.

Study Terminology

Evidence-Based Practice (EBP): Evidence-based practices are teaching strategies or methods that have been proven effective through rigorous peer-reviewed research, and when implemented consistently, lead to positive and measurable increases in student achievement or changes in student behavior. With respect to Autism Spectrum Disorder (ASD), these practices include interventions that have been demonstrated through research to be effective in improving the academic, social and behavioral skills of children with autism (Autism Training Academy, 2025; Project ACCESS, 2025). For the purposes of this study, the researcher will describe evidence-based practices as methods, strategies, or programs that have been documented to be effective in working with children with ASD to advance their skills, which are based on theoretical models and strong empirical foundations, and are designed to be used by preschool teachers.

Population and Sample

The entire population of the study comprises preschool teachers in Saudi Arabia who worked with children with ASD for the academic year 2022/2023. The study sample consisted of 76 teachers who, due to the small population size and anticipated low response rate to the online survey, were selected purposively. Permission was obtained through coordination with the educational administrations in the different Regions of the Kingdom (i.e. Riyadh, Eastern Region, Makkah, Tabuk, and Asir) to carry out the survey in their Regions. In order to ensure compliance with the Regional Distribution Guidelines, the survey was sent to the teachers through email, messaging apps, and mobile calls.

Sample Description

Data was obtained from 76 preschool teachers and the data was classified along the four demographic variables that were of relevance to the study: (i) academic qualification, (ii) years of experience with children with ASD, (iii) age, and (iv) number of past trainings in the provision of evidence-based practice.

Demographic Characteristics of the Sample

1. Academic Qualification:

Table 1. Distribution of participants according to academic qualification (N = 76)

Academic Qualification	n	%
Less than Bachelor's	8	10.53
Bachelor's Degree	59	77.63
Postgraduate Studies	9	11.84
Total	76	100

As shown in Table 1 and Figure 1, the majority of the participants held a Bachelor's degree (77.63%), followed by those with postgraduate qualifications (11.84%), while participants with less than a Bachelor's degree accounted for 10.53%.

2. Years of Experience with Children with Autism Spectrum Disorder (ASD):

Table 2. Distribution of participants according to years of experience with children with ASD (N = 76)

Years of Experience	n	%
1 year	29	38.16
2 years	9	11.84
3 years	9	11.84
4 years	6	7.89
5 years or more	23	30.26
Total	76	100

As indicated in Table 2, the largest proportion of teachers (38.16%) had one year of experience with children with ASD, followed by those with five or more years of experience (30.26%). The remaining experience levels ranged around 10% for each group.

3. Region:

Table 3. Distribution of participants according to region (N = 76)

Region	n	%
Riyadh	23	30.26
Makkah	19	25.00
Eastern Region	17	22.37
Asir	9	11.84
Tabuk	8	10.53
Total	76	100

As shown in Table 3, the highest proportion of participants resided in Riyadh (30.26%), followed by Makkah (25%), Eastern Region (22.37%), Asir (11.84%), and Tabuk (10.53%).

Study Instrument

To achieve the goals of the study, the researcher created an evaluation instrument (scale) to calculate the use of evidence-based practices (EBPs) among preschool teachers when dealing with children with autism spectrum disorder (ASD). The scale was designed incorporating multiple international and scientific materials to support the overall evidence and reliability of the scale. These materials include global standard references, such as the National Clearinghouse on Autism Evidence and Practice (NCAEP), which lists 28 educational and behavioral practices validated through empirical evidence (Wong et al., 2015), and the Autism Speaks Evidence-Based Interventions Guide, which offers an outline of the effective practices for children with ASD. Also, the scale construction used other authors who have conducted surveys studying teachers' knowledge and practice of the mentioned practices, such as Al-Hussein (2021) in Saudi Arabia, Aukes (2018) in the United States, Mutua (2019), and Alshafai & Al-Zahrani (2020). These authors mainly focused on examining the knowledge of teachers on EBPs and the practice of teachers in a classroom setting. The completed version of the scale had 28 items.

Validity and Reliability of the Instrument

Content Validity: The first draft of the scale was sent out to 8 judges, who are faculty and special education teachers of ASD, to measure the relevance, clarity, and objectives of the scale. The majority of the judges affirmed positive feedback to the items and stated that the items encapsulated the targeted constructs. The judges provided feedback to transform the wording of some items. *Internal Consistency Validity*: The internal consistency of the scale was measured through the item-total correlation (Pearson correlation) of each item to the total score of the domain. Each of the correlation coefficients for items and their respective domain sums was significant (statistically) at the 0.05 level at (positively) r=0.200 to r=0.849. This shows a high internal consistency, meaning each of the domains, in regard to the measure of the scale for the use of evidence-based practices (EBPs) is highly internally consistent. *Scale Reliability*: The instrument was evaluated for reliability using the Cronbach's alpha coefficient (α). The alpha score was α=0.94, which speaks to exceptional reliability.

Scoring of the Study Instrument: The scale employed a 5-point Likert format, ranging from Strongly Agree (5) to Strongly Disagree (1). The score range for responses was calculated using the following formula:

$$\text{Range}=\frac{\text{Highest possible mean score-Lowest possible mean score}}{\text{Number of scale points}}=\frac{5-1}{5}=0.80$$

Accordingly, the levels of agreement were interpreted as follows: Very Low: 1.00 – 1.80. Low: 1.81 – 2.60. Medium: 2.61 – 3.40. High: 3.41 – 4.20. Very High: 4.21 – 5.00

Statistical Methods

To answer the study questions, the data were processed using a computer by employing the Statistical Package for Social Sciences (SPSS), version 24.0. The following statistical methods were used to address the study questions:

1. Descriptive statistics: Mean, standard deviation, frequency, and percentage were calculated to describe the responses and overall scores for the study domains.
2. Independent samples t-test: Used to test differences in mean scores between two groups for demographic variables with two categories.
3. One-way ANOVA: Used to test differences in mean scores across demographic variables with three or more categories.
4. Linear regression analysis: Used to examine the effect of independent variables on the dependent variable.

RESULTS AND DISCUSSION

To answer the first research question regarding the degree to which preschool teachers employ EBPs with children with ASD, descriptive statistics were calculated, including frequency, percentage, mean, standard deviation, and response level, as shown in Table 4.

Table 4. Descriptive Statistics for Preschool Teachers' Use of Evidence-Based Practices with Children with Autism Spectrum Disorder (n = 76)

No.	Statement (EBP)	Mean	SD	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	Response Level
18	Reinforcement: Providing immediate rewards after the learner performs a skill or response to increase the likelihood of repeating it.	4.03	0.74	1 (1.32%)	0 (0%)	5 (6.58%)	30 (39.47%)	40 (52.63%)	High
15	Parent-mediated intervention: Parents deliver practices trained by teachers to teach social or other skills or reduce undesirable behaviors.	3.33	0.57	0 (0%)	0 (0%)	4 (5.26%)	43 (56.58%)	29 (38.16%)	Medium
8	Exercise and movement: Interventions using physical effort, fine or gross motor skills to target various skills and behaviors.	3.29	0.61	0 (0%)	0 (0%)	6 (7.89%)	42 (55.26%)	28 (36.84%)	Medium
2	Augmentative and alternative communication (AAC): Nonverbal communication methods such as picture exchange systems or sign language.	3.28	0.74	1 (1.32%)	1 (1.32%)	4 (5.26%)	40 (52.63%)	30 (39.47%)	Medium
7	Discrete Trial Training (DTT): Breaking complex skills into smaller components for easier learning.	3.28	0.95	3 (3.95%)	1 (1.32%)	5 (6.58%)	30 (39.47%)	37 (48.68%)	Medium
9	Extinction: Removing reinforcement for undesired behavior to reduce its occurrence.	3.26	0.62	0 (0%)	0 (0%)	7 (9.21%)	42 (55.26%)	27 (35.53%)	Medium
21	Sensory integration: Targeting the ability to process sensory information from body and environment to regulate adaptive responses.	3.25	0.68	0 (0%)	1 (1.32%)	7 (9.21%)	40 (52.63%)	28 (36.84%)	Medium

16	Peer-mediated guidance/intervention: Teachers or adults organize social contexts and provide support to facilitate peer interactions.	3.25	0.75	0 (0%)	2 (2.63%)	8 (10.53%)	35 (46.05%)	31 (40.79%)	Medium
28	Visual supports: Using visual displays to support and encourage engagement in skills or behaviors.	3.25	0.77	0 (0%)	2 (2.63%)	9 (11.84%)	33 (43.42%)	32 (42.11%)	Medium
25	Technology-assisted teaching/intervention: Using technology as a central feature to support learning or behavior performance.	3.22	0.70	0 (0%)	0 (0%)	12 (15.79%)	35 (46.05%)	29 (38.16%)	Medium
17	Prompting: Verbal, gestural, or physical assistance to support skill acquisition.	3.22	0.89	1 (1.32%)	3 (3.95%)	8 (10.53%)	30 (39.47%)	34 (44.74%)	Medium
12	Modeling: Demonstrating the targeted behavior for the learner to observe and acquire.	3.22	0.90	1 (1.32%)	3 (3.95%)	9 (11.84%)	28 (36.84%)	35 (46.05%)	Medium
10	Functional Behavioral Assessment: Systematic method to identify the purpose of a behavior to develop an effective intervention plan.	3.18	0.65	0 (0%)	0 (0%)	10 (13.16%)	42 (55.26%)	24 (31.58%)	Medium
23	Social skills training: Individual or group instruction to teach appropriate social participation strategies.	3.18	0.72	0 (0%)	1 (1.32%)	11 (14.47%)	37 (48.68%)	27 (35.53%)	Medium
24	Task analysis: Breaking down activities/behaviors into small steps for teaching and assessment.	3.18	0.80	0 (0%)	2 (2.63%)	12 (15.79%)	32 (42.11%)	30 (39.47%)	Medium
14	Naturalistic interventions: Teaching strategies integrated into daily routines using natural reinforcement and support.	3.17	0.72	0 (0%)	2 (2.63%)	8 (10.53%)	41 (53.95%)	25 (32.89%)	Medium

22	Social stories: Describing social situations with examples of appropriate responses to desired behaviors.	3.17	0.72	0 (0%)	1 (1.32%)	11 (14.47%)	38 (50%)	26 (34.21%)	Medium
27	Video modeling: Using recorded demonstrations of the targeted behavior/skill.	3.14	0.87	0 (0%)	4 (5.26%)	12 (15.79%)	29 (38.16%)	31 (40.79%)	Medium
20	Self-management: Teaching learners to monitor, record, and reward their own appropriate behaviors.	3.13	0.85	1 (1.32%)	2 (2.63%)	11 (14.47%)	36 (47.37%)	28 (36.84%)	Medium
6	Direct instruction: Structured lessons where the teacher guides the learning process systematically.	3.13	0.96	2 (2.63%)	3 (3.95%)	9 (11.84%)	31 (40.79%)	31 (40.79%)	Medium
11	Functional communication training: Replacing maladaptive communication behaviors with effective alternatives.	3.07	0.80	0 (0%)	1 (1.32%)	18 (23.68%)	30 (39.47%)	27 (35.53%)	Medium
5	Differential reinforcement: Increasing desirable behaviors and reducing undesired ones without introducing aversive stimuli.	3.00	0.87	1 (1.32%)	3 (3.95%)	11 (14.47%)	36 (47.37%)	25 (32.89%)	Medium
19	Response prevention/Redirecti on: Redirecting attention or using prompts to reduce undesired repetitive or harmful behavior.	2.97	0.86	1 (1.32%)	1 (1.32%)	18 (23.68%)	31 (40.79%)	25 (32.89%)	Medium
26	Time delay: Systematically delaying reinforcement or instruction by a brief interval.	2.91	0.78	0 (0%)	2 (2.63%)	17 (22.37%)	36 (47.37%)	21 (27.63%)	Medium
4	Cognitive-behavioral strategies: Managing behavior through cognitive processes to produce behavioral and academic changes.	2.90	0.84	1 (1.32%)	3 (3.95%)	12 (15.79%)	40 (52.63%)	20 (26.32%)	Medium

13	Music-mediated intervention: Using songs, rhythm, and melody to support learning and desired skills.	2.89	1.08	5 (6.58%)	2 (2.63%)	12 (15.79%)	34 (44.74%)	23 (30.26%)	Medium
1	Antecedent-based interventions: Interventions manipulating environmental events prior to behavior.	2.55	0.81	1 (1.32%)	1 (1.32%)	17 (22.37%)	38 (50%)	19 (25%)	Low
3	Behavioral momentum: Using high-probability requests followed by low-probability tasks to increase compliance.	2.36	0.87	1 (1.32%)	2 (2.63%)	23 (30.26%)	31 (40.79%)	19 (25%)	Low

According to the table, the preschool teachers' use of evidence-based practices (EBPs) for children with autism spectrum disorder (ASD) showed a moderate mean of (M = 3.57) with a low standard deviation (SD = 0.51). This shows moderate applicability and a consistency trend in the teachers' responses. The results showed that the use of reinforcement was rated the highest, with a very high implementation level (M = 4.03), since the most teachers either agreed or strongly agreed to its use. This was most likely because reinforcement is straightforward to use and has a clear and immediate impact on behavior improvement and the increased likelihood of recurring behaviors.

As reinforced by literature on applied behavior analysis, reinforcement is arguably the most effective and most practiced technique when teaching children with ASD (Cook et al., 2008; Hume et al., 2021). Also, parent-implemented intervention practices, exercise and movement activities, augmentative and alternative communication, and discrete trial training (DTT) were implemented at a moderately high level (M = 3.22-3.33). This shows that teachers appreciate the importance of these practices in building social and communication skills of children with ASD.

Yet prior research indicates that implementation may be hindered by the challenge of integrating the necessary specialized training, parent involvement, and educational resources for implementation (Sandbank et al., 2023; Hampton & Kaiser, 2016). On the other hand, antecedent-based, behavioral momentum-based, and music-mediated interventions were practiced at a moderate to low level, with mean scores of (M = 2.36-2.55), which indicates that fewer practitioners implement these moderately complex interventions. Given the reality of high student variability and high instructional demands in preschool classrooms, this may lead to a lack of opportunities for repeated implementation (Hume et al., 2021; Cook et al., 2008). Al-Hussein (2021) found the results of this study to be similar to his study where moderate levels of knowledge and use of evidence-based practices (EBPs) with children with Autism Spectrum Disorder (ASD) were found. The results fittingly confirm the previous studies that most practitioners have at least basic knowledge of reinforcement, as noted in Al-Shafai & Al-Zahrani (2020) and Grattan (2017). The findings were consistent with Mutua (2019) who focused on special education teachers, and Aukes (2018) who focused on teachers of children with ASD.

Overall, the results indicate that preschool teachers are more likely to adopt and implement evidence-based practices (EBPs) that are straightforward, uncomplicated, and easy to execute, while more infrequent employing practices that involve more extensive planning and/or boss type supervision. This illustrates the importance of ongoing professional development and the ability to most effectively implement EBPs and obtain optimal results for children with ASD (Sandbank et al., 2023; Hume et al., 2021) while bridging the divide between theory and practice.

Results Related to the Second Research Question:

Are there statistically significant differences at the 0.05 level in the degree of preschool teachers' implementation of EBPs with children with ASD based on years of experience with ASD, educational qualification, or type of supervision (public/private)?

To answer this question, a one-way ANOVA was used to detect differences in means for demographic variables with three or more categories, while an independent samples t-test was applied for variables with two categories. The results are presented in the following tables:

Years of Experience

Table (5). One-way ANOVA for differences in preschool teachers' implementation of evidence-based practices (EBPs) according to years of experience (N = 76)

Source of Variance	Sum of Squares	df	Mean Square	F	Sig.	Descriptive Data	SD	Mean	Category	Variable
Between Groups	0.53	4	0.21	0.80	0.53	0.82	4.00	3.64	1 year	EBP implementation
Within Groups	18.33	71	0.26			0.77		3.71	2 years	
Total	19.15	75				0.44		3.66	3 years	
						0.28		3.77	4 years	
						0.42		3.77	5+ years	

The above table shows that, for one way ANOVA, all F-values were not statistically significant at the 0.05 levels. This shows that irrespective of the number of years of experience, the participants of the sample gave the same responses. In other words, the number of years of teaching experience the preschool teachers had with children with ASD did not influence the use of EBP. This could be because the effective use of EBP with children with ASD requires more specialized and targeted training for teachers in the area of special education or in the area of autism, rather than just years of teaching experience. This outcome corresponds with Al-Shafai & Al-Zahrani (2020) as no statistically significant outcomes were evident due to years of teaching experience. This however, is not the case with Aukes (2018) who documented that more years of teaching experience meant more knowledge, use of EBP and great competence and therefore described more amount of experience teaching. This difference could be due to the context of the sample and the type of experience described in the studies.

Educational Qualification

Table (6). One-way ANOVA for differences in preschool teachers' implementation of evidence-based practices (EBPs) according to educational qualification (N = 76)

Source of Variance	Sum of Squares	df	Mean Square	F	Sig.	Descrip-tive Data	SD	Mean	Category	Variable
Between Groups	2.81	2	1.37	0.68	0.07	0.49	3.67	Less than Bachelor	EBP implementation	
Within Groups	17.78	73	0.24			0.50	3.77	Bachelor		
Total	19.15	75				0.43	3.71	Postgraduate		

The table shows that all F-values from the one-way ANOVA have not been determined to be statistically significant at the 0.05 level. This shows there are no differences in the sample responses based on educational qualifications. This means that preschool teachers' uses of EBPs with children with ASD is not dependent on their formal education. As mentioned before, effective use of EBPs is relevant to the teachers' specific training in special education or autism, and not the degree they have. Overall, this is contrary to the findings of Al-Shafai & Al-Zahrani (2020), where teachers with a

Master's degree in Special Education were found to have statistically significant differences in the use of EBPs. This can be explained by the fact that the sample consisted of teachers who are specialists in special education, which shows that specialization can be more important than educational attainment in determining the degree of EBP use.

CONCLUSIONS

From the findings, the study recommends the following: 1. Professional development training: Develop training that emphasizes teaching preschool teachers about Evidence Based Practices (EBPs), specifically the less commonly used practices like behavior momentum, antecedent-based intervention, and music-mediated intervention. 2. Supervision and guidance: Assign autism specialists to the classroom to help teachers implement EBPs and make sure that they are teaching to the level expected in a given standard. 3. Teaching guide development: Provide teachers with materials to help them implement EBPs so that they are fully prepared to do so in any type of classroom. 4. More support for EBPs is needed: This may include the formulation of a school-based policy to support the implementation of EBPs in a measured and calculated way. This may include the encouragement of teachers to take a risk and support in a measured and calculated way. The creation of groups to support the discussion of what is known as the 'open' a space to support the teachers to do what is known as 'open space' to support the 'open space' to support the teachers. 5. local and regional investigations: Investigate the use of EBPs in the local classroom to what extent is the use of EBPs in the classroom based on the level of experience and qualifications on the wider usage of the EBPs.

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