

KNOWLEDGE, ATTITUDE, AND SELF-EFFICACY OF IN-SERVICE PRESCHOOL TEACHERS TOWARDS INCLUSION OF AUTISTIC CHILDREN

Lee Wei Tan^{1*}, Rohani Abdullah²

^{1,2}Department of Early Childhood Education, Faculty of Education, Open University Malaysia, Petaling Jaya, Selangor, Malaysia

nicole99tlw@gmail.com¹, rohani56@oum.edu.my²

*Corresponding Author

Published: 02 December 2024

To cite this article (APA): Lee, W. T., & Abdullah, R. (2024). Knowledge, Attitude, and Self-Efficacy of in-service Preschool Teachers Towards Inclusion of Autistic Children. *Jurnal Pendidikan Awal Kanak-Kanak Kebangsaan*, 13(2), 68–81. <https://doi.org/10.37134/jpak.vol13.2.7.2024>

To link to this article: <https://doi.org/10.37134/jpak.vol13.2.7.2024>

ABSTRACT

Inclusive early childhood education is a best practice for ensuring equal quality education, social experiences, learning, or developing for all children, including those with special educational needs and disabilities. However, autistic children often face isolation, exclusion, or marginalisation until restriction in early childhood educational opportunities to fulfilment their differentiated needs. Teachers play a vital role in implementing inclusive education. Therefore, this study aimed to examine in-service preschool teachers' knowledge on ASD characteristics, their attitude, and self-efficacy towards inclusion of autistic children. A quantitative, cross-sectional survey was conducted with 152 Malaysian in-service mainstream preschool teachers using non-probability of snowball sampling. The findings indicated that most of the preschool teachers in this study had an average knowledge on ASD characteristics, as well as their attitude, and self-efficacy towards the inclusion of autistic children. A positive correlation was found between preschool teachers' knowledge on ASD characteristics and their attitude towards the inclusion of autistic children. A negative correlation was also found between preschool teachers' attitude and their self-efficacy towards the inclusion of autistic children. The findings suggest that teachers' professional development and training program focused on autism-specific characteristics and inclusive pedagogical practices are essential for in-service teachers. These programs can enhance teachers' knowledge about autism, foster positive attitude, and promote self-efficacy competence in educating and supporting the academic, social, and communicative skills of autistic children in mainstream classrooms. In conclusion, preschool teachers' knowledge, attitudes, and self-efficacy are crucial for successfully implementing the inclusion of autistic children in early childhood education.

Keywords: Inclusive early childhood education, Preschool teachers' knowledge, Preschool teachers' attitude, Preschool teachers' self-efficacy, Autistic children

INTRODUCTION

Autism Spectrum Disorder (ASD) is a lifelong neurodevelopmental condition (Ivanović, 2021) characterised by impairments in social interaction and communication, as well as the presence of repetitive, restricted, and stereotyped behaviours and activities (Parmeggiani, Corinaldesi & Posar, 2019; Al Jaffal, 2022). These core behavioural symptoms usually appear during infancy or early childhood (Whiteley, Carr & Shattock, 2019). The etiopathogenesis of ASD is complex and multifactorial, involving a dynamic interplay between genetic and environmental factors (Parmeggiani et al., 2019; Iles, 2021). Approximately 52 million cases of ASD have been reported

globally (Sharudin et al., 2021), with an estimated prevalence of around one in 100 children diagnosed with ASD worldwide (World Health Organization [WHO], 2022). This significant increase in the prevalence of ASD (Sharudin et al., 2021) over time has raised concerns, prompting the need for further research into the well-being and quality of life of autistic children.

Inclusive Education (IE) has gained global attention as a key approach for better nourishment of children with special educational needs and disabilities (SEND), while avoiding exclusionary practices (Singh, Kumar & Singh, 2020). It not only facilitates the creation of a comprehensively inclusive environment that supports the optimal development and learning of all children, but also to encourage equal rights for each individual without any prejudice (Singh et al., 2020). Therefore, the principles of IE are made prominent as part of the Salamanca Statement (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 1994). The United Nations General Comment No. 4 also emphasised the supreme importance of the legally binding nature of the Convention on the Rights of Persons with Disabilities 4 (CRPD) and the call for quality IE (Goddard & Evans, 2018). Inclusive early childhood education (IECE) is essential and fundamental for creating high-quality early childhood programs that ensure all children, with or without SEND experience optimal growth and development, while promoting equity for everyone (Ackah-Jnr & Udah, 2021). Although IECE promotes and welcomes diversity as well as provides benefits of enhancing learning, socialisation, and development in young children, however, children with SEND are always isolated, marginalised, or excluded in early childhood settings (Ackah-Jnr & Udah, 2021). They are not welcomed and accepted equally and equitably in schools. They are not provided educational chances to fulfilment their diverse needs. Community considered them as a burden on society and educational system that brings about their exclusion from normal life. (Singh et al., 2020).

Moreover, the goals of Sustainable Development Goal (SDG) including to ensure inclusive and equitable quality education, and promote lifelong learning chances for all learners as well as reduce inequality within and among nations (United Nations [UN], 2023). On the other hand, in Malaysia, the Zero Reject Policy (ZRP) was launched in 2019, is a policy that is in line with the No Children Left Behind (NCLB) (2001) policy to focus on providing special needs students equal access to education (Chin, 2020). However, attitude, perception, and belief of teachers towards IE impact successful implementation of it in schools. (Goddard & Evans, 2018). Hence, teachers' attitudes determine the success of IE. Research has discovered that general education teachers lack of professional development and training to build an inclusive environment successfully (Al Jaffal, 2022; Gómez-Marí et al., 2021, 2022). Both mainstream pre-service and in-service teachers face difficulties in supporting and managing students with SEND effectively because they lack of special educational needs training and practical knowledge (Deng & Poon-McBrayer, 2012). Past research discovered that teachers have negative attitude and perceptions towards autistic students. They perceived that autistic students have low levels of academic achievement and social communication development (Gómez-Marí et al., 2021, 2022).

Furthermore, each autistic child has the right and opportunity to access to quality education in the least restrictive environment of the mainstream education setting to achieve the goals of IE practices (Al Jaffal, 2022). However, autistic children often face various obstacles in mainstream education classrooms due to delays in social and communication skills, difficulties with play and learning, and challenging behaviors (Allen & Yau, 2019). These challenges can hinder their ability to engage in classroom activities and make it difficult to communicate with peers, potentially leading to social withdrawal or isolation, particularly during group activities or playtime. (Conallen & Reed, 2017). Consequently, the characteristics and conditions of autistic children can cause disruptions in the mainstream education classroom for teachers (Mody & Belliveau, 2013). The result findings from the study by Al Jaffal (2022), showed that general education teachers lack of

relevant knowledge, appropriate teaching strategies, and training pertaining strategies how to work with and teach autistic children in mainstream education settings. A lot of early childhood educators have poor and negative attitudes toward the inclusion of autistic children (Russell, Scriney & Smyth, 2022) because they claimed themselves insufficient preparation and lack of ASD-specific training, and practical experience to meet the diverse needs of all young children (Karaolis, 2021). General education teachers with a low sense of self-efficacy often find it more challenging, time-consuming, and stressful to include autistic children in mainstream classrooms (Anglim, Prendeville & Kinsella, 2017). Their lack of confidence, inflexibility, and unwillingness to make necessary modifications to the curriculum and teaching strategies further contribute to the difficulty of meeting the unique needs of each autistic child. (Al Jaffal, 2022).

Therefore, the aim of this research study is to examine the knowledge on ASD characteristics, as well as their attitudes, and self-efficacy of preschool teachers towards inclusion of autistic children in preschool general education classrooms.

Research Objectives and Research Hypotheses

Teachers play an important role in influencing successful implementation of IE in early childhood environments. Teachers would promote participation, learning, interaction, and engagement of children in early childhood settings if they are equipped with the knowledge, inclusive skilled pedagogically, and have favourable traits limit exclusion (Ainscow, 2020; Ackah-Jnr & Uдах, 2021).

Hence, the specific research objectives in this research study are as follows:

1. To describe the preschool teachers' knowledge on ASD characteristics, as well as their attitude, and self-efficacy towards the inclusion of autistic children in preschool education.
2. To determine the relationship between knowledge on ASD characteristics and attitude of preschool teachers towards the inclusion of autistic children in preschool education.
3. To determine the relationship between knowledge on ASD characteristics and self-efficacy of preschool teachers towards the inclusion of autistic children in preschool education.
4. To determine the relationship between attitude and self-efficacy of preschool teachers towards the inclusion of autistic children in preschool education.

The null hypotheses in the study are as follows:

H₀₁: There is no significant relationship between the knowledge on ASD characteristics and attitude of preschool teachers towards the inclusion of autistic children in preschool education.

H₀₂: There is no significant relationship between the knowledge on ASD characteristics and self-efficacy of preschool teachers towards the inclusion of autistic children in preschool education.

H₀₃: There is no significant relationship between the attitude and self-efficacy of preschool teachers towards the inclusion of autistic children in preschool education.

METHODOLOGY

Procedures

Quantitative research of a non-experimental, cross-sectional survey design was used in this research to examine knowledge on ASD characteristics, as well as their attitudes, and self-efficacy of preschool teachers towards implementation inclusion of autistic children in regular early childhood classroom settings. The population of the research consisted of Malaysian preschool teachers who were working in government and private kindergartens teaching four to six years old

preschoolers countrywide at the time of data collection. An exponential non-discriminative snowball sampling was used whereby the first respondents were recruited to the sample group provided multiple referrals (Morgan, 2008). The advantages of snowball sampling were cost-effective, simple to implement, and useful for locating specific population (Johnson, 2014). Therefore, researcher selected initial respondents who were preschool teachers or principals of the preschool to recruit their peers or friends or relatives who were preschool teachers, who then themselves recruited their peers, and so forth until the target sample size was achieved. The survey was accessible to respondents online via Google Drive. Utilizing internet-based surveys allowed reaching a wide population while maintaining anonymity, and a diverse array of respondents to enhance the survey's generalizability (Cohen et al., 2011). The recruitment was made by contacting Open University Malaysia (OUM) course-mates who were preschool teachers, owners of preschool, principals of preschool by sending them a WhatsApp Messenger with attached online questionnaire Google Form link. They were asked to distribute the online survey form to their preschool teachers, colleagues or friends who were preschool teachers to fill up the online survey form. It also mentioned that participation would be voluntary and anonymous, and that respondents were free to withdraw at any time without any penalty incurred. Consent was implied and assumed by respondents' online completion submission of questionnaire responses (Goddard & Evans, 2018). As for the actual study's sample size, a total of 152 respondents had taken part in the actual research study.

Data on Malaysian preschool teachers' knowledge on ASD characteristics, as well as their attitude, and self-efficacy towards implementation inclusion of autistic children was examined utilizing the Statistical Package for Social Sciences (SPSS) software version 27. It included the descriptive statistics calculation of total scores, means, frequency, percentage, and standard deviations for knowledge, attitude, and self-efficacy of preschool teachers for comparison of responses to survey items in the questionnaire (Goddard & Evans, 2018). The inferential statistics analysed data from the sample to determine the overall trend in the population and to assess the study's hypotheses.

Instrumentation

Survey research aimed to measure the qualities and characteristics of a particular target population considering a part of that population known as sample by employing a designed instruction of a questionnaire and applying statistical techniques (Taherdoost, 2022). Hence, a survey instrument with 5-point Likert scale ranging from 1= strongly disagree, 2-disgrae, 3-unsure, 4-agree to 5= strongly agree was developed for this research including four sections: (A) Preschool Teachers' Demographic Data, (B) Preschool Teachers' Knowledge on ASD Characteristics, (C) Preschool Teachers' Attitude Towards Inclusion of Autistic Children, (D) Preschool Teachers' Self-Efficacy Towards Inclusion of Autistic Children.

Section A was a demographic survey designed to gather demographic data of preschool teachers. It included teachers' characteristics, for instance age, gender, race, state, position, types of preschools, and level of education qualification. It also collected the information about years of work experience as preschool teacher, years of work experience with children with ASD, and training related to ASD in this section (Haimour & Obaidat, 2013, Engstrand & Roll-Pettersson, 2014; Low et al., 2020).

Section B in the survey was about to determine preschool teachers' knowledge about ASD characteristics. The Autism Knowledge Questionnaire (AKQ) (Stone, 1987; Shah, 2001; Furnham & Buck, 2003; Haimour & Obaidat, 2013) was used to collect the data. The AKQ comprises of 30 items which are intended to measure preschool teachers' knowledge of ASD (Haimour & Obaidat,

2013). It covers knowledge of common information regarding the characteristics of students with ASD and how these students with ASD perform (Haimour & Obaidat, 2013).

Section C in the survey used Autism Attitude Scale for Teachers (AAST) (Olley et al., 1981; Engstrand & Roll-Pettersson, 2014) is an attitudinal measure on educational inclusion for autistic students. The AAST consists of 14 items to measure attitude towards autistic children in mainstream education schools that ‘.....should yield more correct prognosis of behaviours towards autistic children than would a more global scale’ (Olley et al., 1981; Engstrand & Roll-Pettersson, 2014; Low et al., 2020).

As for the Section D in the survey uses Autism Self- Efficacy Scale for Teachers (ASSET) (Ruble et al., 2013) for the data collection. The ASSET consists of 30 items to measure teachers’ self-efficacy regards to student with ASD (Ruble et al., 2013).

Reliability and Validity of Instrument

A pilot study in social science research was defined as before proceeding to actual data collection, a small sample test or a trial test was conducted (Aqilah et al., 2016). Malhotra (2008) suggested that the sample size for pre-test was ranging from 15-30 respondents which was generally small sample size (Aqilah et al., 2016). Hence, in order to ensure reliability and validity of instrument, a pilot trial of the survey was carried out (Cohen et al., 2011), with 17 respondents of nationwide in-service preschool teachers who were teaching four to six years old children were recruited by snowball sampling technique. The Rule of Thumb cited in Hair et al (2016) stated a value of Cronbach’s Alpha which included excellent reliability (0.90 and above); very good reliability (0.80 to < 0.90); good reliability (0.70 to < 0.80); moderate reliability (0.60 to < 0.70); and poor reliability (0.60 and below) (Nawi et al., 2020). The reliability of the pilot study reported a Cronbach’s Alpha reliability coefficient of 0.72 to 0.97. The knowledge subscale comprised of 30 items ($\alpha = .72$), the attitude subscale consisted of 14 items ($\alpha = .88$), and the self-efficacy subscale consisted of 30 items ($\alpha = .97$). These reliability scores ranged from good to excellent.

Simplification of English wordings without changing the origin meaning were then made to items in the questionnaire before conducting the actual study. The questionnaire was then translated to Malay and Mandarin languages to ease the respondents’ understanding of the questions in the questionnaire. It was also part of the adoption and adaptation process based on the Malaysia context. An expert review was carried out to ensure the validity of the instrument to know the views on the items in terms of comprehensiveness and relevance to the purposes of the research (Aldabas, 2020). Therefore, the instrument was submitted to supervisor from the Department of Early Childhood Education Open University Malaysia for input and recommendations. The instrument also was reviewed by industrial expert. This process ensured that the instrument accurately measured the intended variables to enhance its quality of the instrument. Subsequently, the instrument underwent review and final amendments were made with the supervisor’s guidance before it was distributed to the respondents for the actual study. The reliability statistics of the actual study reported a Cronbach’s Alpha value ranging from 0.77 to 0.98. The knowledge subscale comprised of 30 items ($\alpha = .78$), the attitude subscale comprised of 14 items ($\alpha = .66$), and the self-efficacy subscale comprised of 30 items ($\alpha = .98$). Item no. 3 and item no. 10 in the attitude subscale were deleted to yield a better reliability coefficient (12 items, $\alpha = .77$). Thus, the reliability coefficients in the actual study were maintained at above .70 (good to excellent).

RESULTS

Preschool Teachers' Demographic Data

The preschool teachers' demographic information was gathered through Section A of the survey to identify the background of the preschool teachers. An overview of the demographic data of the respondents as shown in Table 1.

Table 1
Demographic Profile of Preschool Teachers

	n (%)
Gender	
Male	9 (6)
Female	143 (94)
Age	
20 – 29 years old	36 (23.7)
30 – 39 years old	59 (38.9)
40 – 49 years old	39 (25.7)
50 – 59 years old	15 (9.9)
60 – 69 years old	3 (2.1)
Race	
Malay	(74.3)
Chinese	25 (16.4)
Indian	14 (9.2)
Education Level	
Diploma	85 (55.9)
Bachelor's degree	50 (32.9)
Master's degree	16 (10.5)
Doctorate degree	1 (0.7)
Types of Preschools	
Private preschools	75 (49.3)
Government preschools	71 (46.7)
International preschools	4 (2.6)
Both private and government preschools	2 (1.3)
Position	
General education	147 (96.7)
Special education	5 (3.3)
Years of Work Experience as Preschool Teacher	
Had no teaching experience	1 (0.7)
Had less than 13 years of teaching experience	103 (67.8)
Had more than 13 years of teaching experience	48 (31.5)
Years of Work Experience with Autistic Children	
Had no work experience with autistic children	102 (67.1)
Had one year of work experience with autistic children	13 (8.6)
Had two to five years of work experience with autistic children	23 (15.1)
Had six to twenty years of work experience with autistic children	14 (9.2)
Training in Autism Spectrum Disorder (ASD)	
Had prior training in ASD	20 (13.2)
Interested, but no prior training in ASD	98 (64.5)
No interested and no prior training in ASD	34 (22.4)

Descriptive Statistics on Main Variables

The first research objective is to describe the preschool teachers' knowledge on ASD characteristics, as well as their attitude, and self-efficacy towards the inclusion of autistic children in preschool education. Descriptive statistics on three main variables in this study is depicted in Table 2.

Table 2
Descriptive statistics of main variables (n = 152)

Main Variable	Minimum	Maximum	Mean	Standard Deviation
1. Preschool teachers' knowledge on ASD characteristics (30 Items)	76	131	99.90	9.59
2. Preschool teachers' attitudes towards inclusion of autistic children (12 Items)	22	57	40.63	6.61
3. Preschool teachers' self-efficacy towards inclusion of autistic children (30 Items)	30	150	94.66	19.27

The preschool teachers' knowledge on ASD characteristics was computed based on 30 items (refer with: Table 2). The total scores for the preschool teachers' knowledge on ASD characteristics ranged from 76 to 131. Its mean total score was 99.90 (SD = 9.59). Thus, the preschool teachers in this study had attained average knowledge on ASD characteristics. Additional investigation revealed that most of the preschool teachers were agreed that ASD can be diagnosed through behavioural observation (72.4%) and that some children with autism have high or low sensitivity of visual, auditory, tactile, or olfactory stimuli (69.7%). However, the preschool teachers were unsure that autism could be associated with Epilepsy (57.2%) and that medication can improve the core symptoms of ASD (48.0%). On the other hand, they were disagreed that the majority of children with autism are female (48.7%) and that ASD could be diagnosed based on physical features only (46.1%).

The preschool teachers' attitude towards inclusion of autistic children was computed based on 12 items (refer with: Table 2). The total scores for the preschool teachers' attitude towards inclusion of autistic children ranged from 22 to 57. Its mean total score was 40.63 (SD = 6.61). Again, the preschool teachers in this study had achieved average attitude towards inclusion of autistic children. Further examination revealed that the preschool teachers agreed that a good preschool teacher can do a lot to help a child with autism (69.7%) and that children with autism can learn from a good preschool teacher (58.6%). They also agreed that only preschool teachers with extensive special education training can help a child with autism (46.7%).

The preschool teachers' self-efficacy towards the inclusion of autistic children was computed based on 30 items (refer with: Table 2). The total scores for the preschool teachers' self-efficacy regard to student with ASD ranged from 30 to 150. Its mean total score was 94.66 (SD = 19.27). Hence, the preschool teachers in this study had attained average self-efficacy towards the inclusion of autistic children. Additional investigation revealed that half of preschool teachers agreed that they can describe a child's characteristics that relate to autism (51.3%). However, they unsure whether they can describe the implications for intervention based on a child's characteristics of autism (52.6%).

Hypothesis Testing

The Pearson’s Product Moment Correlation was employed to examine null hypothesis 1. The result of the analysis in Table 3 indicated that preschool teachers’ knowledge on ASD characteristics had a statistically significant moderate positive correlation with their attitude towards inclusion of autistic children ($r = .549, p \leq .001$). Thus, H_{01} was rejected. The study concluded that preschool teachers with high knowledge on ASD characteristics tend to have positive attitude towards the inclusion of autistic children in preschool education, and vice versa.

Table 3

Correlations between Malaysian preschool teachers’ knowledge on ASD characteristics, their attitude, and self-efficacy towards the inclusion of autistic children (n = 152)

Variables	(K)	(A)	(SE)
Knowledge (K)	1	0.549**	0.043
Attitude (A)	0.549**	1	-0.258**
Self-Efficacy (SE)	0.043	-0.258**	1

** Correlation is significant at the 0.01 level (2- tailed).

The Pearson’s Product Moment Correlation was employed to examine null hypothesis 2. The result in Table 3 indicated that the correlation between Malaysian preschool teachers’ knowledge on ASD characteristics and self-efficacy towards the inclusion of autistic children in preschool education were not significant. Hence, this study failed to reject H_{02} . It revealed that the preschool teachers’ knowledge on ASD characteristics was not associated with their self-efficacy towards the inclusion of autistic children in preschool education.

The Pearson’s Product Moment Correlation was employed to examine null hypothesis 3. The result in Table 3 indicated that preschool teachers’ attitude towards inclusion of autistic children had a statistically significant low negative correlation with their self-efficacy towards the inclusion of autistic children ($r = -.258, p = .001$). Thus, H_{03} was rejected and the study concluded that significant low negative relationships existed between preschool teachers’ attitude and self-efficacy towards the inclusion of autistic children in preschool education.

DISCUSSION AND IMPLICATIONS

Preschool Teachers’ Knowledge on ASD Characteristics, Their Attitude, and Self-Efficacy Towards the Inclusion of Autistic Children

The result about the preschool teachers’ knowledge on ASD characteristics in the study was contradicted with past research that indicated majority of in-service teachers lack knowledge of ASD (Liu et al., 2016; Mavropoulou & Padelidu, 2016). The previous research revealed that regular school teachers had less knowledge of ASD than do special education teachers (Engstrand & Roll-Pettersson, 2014; Mavropoulou & Padelidu, 2016). Previous studies had reported misunderstandings, confusion, and discrimination against students with SEND in mainstream schools’ teachers in China (Xu, Cooper, & Sin, 2018). The lack knowledge of ASD among mainstream school teachers created social stigma (Low et al., 2020) that leading to barriers in the

inclusion of autistic students (Roberts & Simpson, 2016).

The result about the preschool teachers' attitude towards the inclusion of autistic children in the study was consistent with past research that revealed school teachers showed a positive attitude towards the inclusion of autistic children in regular school education (Garrad et al., 2019; Su et al., 2020; Russell et al., 2022). A positive attitude towards inclusion of autistic children is importantly to influence a teacher's instructional teaching practices in mainstream classroom (Sharma & Jacobs, 2016). Past research indicated that teachers' positive attitude contributes to the successful education of autistic children (Rodríguez, Saldaña, & Moreno, 2012) including children's academic achievement, self-expectations, self-image, level of academic motivation and attraction to or avoidance of particular tasks (Lu et al., 2020).

The result about the preschool teachers' self-efficacy towards the inclusion of autistic children in the study was contradicted with past research that indicated school teachers showed low sense of self-efficacy towards the inclusion of autistic children in regular school education (Anglim et al., 2017; Lu et al., 2020). Past research indicated that teachers working at mainstream schools lacked confidence and self-assurance in their capabilities to appropriately deal and teach with autistic students (Hunter-Johnson and Newton, 2014; Anglim et al., 2017). Teachers with a low sense of self-efficacy tended to attribute students' learning problems to the disability (Engstrand & Roll-Pettersson, 2014) and unwilling to modify their teaching techniques to accommodate learners' requirements (Anglim et al., 2017).

Relationship Between Preschool Teachers' Knowledge on ASD Characteristics and Their Attitude Towards Inclusion of Autistic Children in Preschool Education

The result of the study indicated a significant moderate positive relationship between preschool teachers' knowledge on ASD characteristics and their attitude towards inclusion of autistic children. This suggested that preschool teachers' knowledge on ASD characteristics was moderately positive associated with their attitude towards inclusion of autistic children. The finding aligned with Lu et al. (2020) and Wittwer et al. (2023) research which also found knowledge on ASD characteristics was moderately positive associated with attitude towards inclusion of autistics children. The richer the teachers' knowledge on ASD characteristics, the more positive their attitude towards inclusion of autistic students (Lu et al., 2020; Gómez-Marí et al., 2022) because extensive knowledge of ASD enhanced teachers' understanding, experience, and skills in handling with autistics students (Chung et al., 2015).

Relationship Between Preschool Teachers' Knowledge on ASD Characteristics and Self-Efficacy Towards Inclusion of Autistic Children in Preschool Education

The result of the study revealed not significant relationship between preschool teachers' knowledge on ASD characteristics and self-efficacy towards the inclusion of autistic children. This proposed that the preschool teachers' knowledge on ASD characteristics was not associated with their self-efficacy towards the inclusion of autistic children. The finding contradicted with Lauermann & König (2016), Lu et al. (2020) and Wittwer et al. (2023) research that indicated that the teachers' knowledge on ASD characteristics was significantly positive correlated with their self-efficacy towards the inclusion of autistic children. Increasing teachers' knowledge on ASD characteristics would increase their confidence and capability to cooperate with autistic students (Corona, Christodulu, & Rinaldi, 2017).

Relationship Between Preschool Teachers' Attitude and Self-Efficacy Towards Inclusion of Autistic Children in Preschool Education

The result of the study indicated a significant low negative relationship between preschool teachers' attitude and their self-efficacy towards the inclusion of autistic children. This suggested that preschool teachers' attitude towards the inclusion of autistic children was low negative associated with their self-efficacy towards inclusion of autistic children. The finding contradicted with Beamer & Yun (2014), Segall & Campbell (2014), Lu et al. (2020) and Yada et al. (2022) research that showed teachers' attitude towards the inclusion of autistic children was significant positive associated with their self-efficacy towards the inclusion of autistic children. Teachers exhibited a positive attitude towards the inclusion of autistic children in mainstream classroom would have a high sense of self-efficacy to teach and support autistic students as well as more willing to include and provide accommodations to autistic students (Lu et al., 2020; Baek, Aguilar & Warschauer, 2024).

Implications

The findings of the current study would be useful in comprehending the preschool teachers' level of knowledge on ASD characteristics, as well as their attitude and self-efficacy towards inclusion of autistic children. It also helpful in knowing the relationships among the preschool teachers' knowledge on ASD characteristics, as well as their attitude and self-efficacy towards inclusion of autistic children. The result of the study would be useful for policymakers or government local educational agencies to develop different inclusive policies and strategies to implement inclusive practices to include autistic children in mainstream educational settings. The cultivation of positive attitude towards autistic children as an important component for both pre-service teachers' education and in-service teachers' training programs through emphasising about autism-specific characteristics, emotional needs, and behaviours management of autistic children, as well as explore evidence-based intervention strategies that teachers could employ to enhance the academic, social, and communicative abilities of autistic students. Teachers' professional development and training about inclusive pedagogical practices enhance teachers' knowledge regarding inclusion issues and are more skillful at using appropriate inclusive pedagogical practices (Florian & Beaton, 2017; Rad et al., 2022) for instance, prompts, individualised instruction, and scaffolding for diverse children to meet each child's learning and development needs. Parents also as part of the "educational ecology" that contributes directly to interventions at home as well as at school (Su et al., 2020). Parent-mediated intervention (PMI) is a home-based programme, time, and cost-effective approach whereby parents who have spent significant amounts of time with their children could conduct PMI activities to teach essential social communication skills, positive behaviours support, and cognitive abilities skills at naturalistic home environment setting (Shalev, Lavine & Martino, 2020; Tan et al., 2024). Therefore, parental involvement is essential and also needs to collaborate closely with teachers in school.

CONCLUSION

The results of the study added to a deeper understanding of Malaysia preschool teachers' knowledge on ASD characteristics, their attitude and self-efficacy towards inclusion of autistic children. It also increased understanding of the nature of relationships between preschool teachers' knowledge on ASD characteristics, their attitude and self-efficacy towards inclusion of autistic children. Therefore, overall, the primary objectives of this quantitative study have been accomplished. The research study concluded that Malaysia preschool teachers are the most decisive factors in the successful inclusion of autistic children in preschool mainstream education

because teachers are mainly responsible for implementing inclusion policy. It also requires schools to offer a conducive school climate, make curriculum accommodations, foster collaboration within interdisciplinary teams, and the involvement of the family of the autistic students to ease the inclusion practices of autistic children.

ACKNOWLEDGEMENT

Thank you to all research team members for their contributions in reviewing the articles.

REFERENCES

- Ackah-Jnr, F. R., & Udah, H. (2021). Implementing inclusive education in early childhood settings: The interplay and impact of exclusion, teacher qualities and professional development in Ghana. *Journal of Educational Research and Practice, 11*(1). <https://doi.org/10.5590/jerap.2021.11.1.0>
- Ainscow, M. (2020). Promoting inclusion and equity in education: Lessons from international experiences. *Nordic Journal of Studies in Educational Policy, 6*(1), 7–16. <https://doi.org/10.1080/20020317.2020.1729587>
- Aldabas, R. (2020). Special education teachers' perceptions of their preparedness to teach students with severe disabilities in inclusive classrooms: A Saudi Arabian perspective. *SAGE Open, 10*(3). <https://doi.org/10.1177/2158244020950657>
- Al Jaffal, M. (2022). Barriers general education teachers face regarding the inclusion of students with autism. *Frontiers in Psychology, 13*. <https://doi.org/10.3389/fpsyg.2022.873248>
- Allen, M. L., & Yau, S. (2019). Research with children with special education needs, in *The Routledge International Handbook of Learning with Technology in Early Childhood*, 1st Edn, eds N. Kucirkova, J. Rowsell, and G. Falloon (Milton Park: Routledge), doi: 10.4324/978131514 3040-19
- Anglim, J., Prendeville, P., & Kinsella, W. (2017). The self-efficacy of primary teachers in supporting the inclusion of children with Autism Spectrum Disorder. *Educational Psychology in Practice, 16*(4). <https://doi.org/10.1080/02667363.2017.1391750>
- Aqilah, N., Yusak, M., Othman, A. R., & Salleh, S. M. (2016). Determinants of service employee commitment: A pilot test study. *Journal of Global Business and Social Entrepreneurship, 2*(3), 1-10.
- Baek, C., Aguilar, S. J., & Warschauer, M. (2024). Exploring teachers' self-efficacy and willingness to provide accommodations in teaching students with autism: An intervention study. *Teaching and Teacher Education, 140*. <https://doi.org/10.1016/j.tate.2024.104488>
- Beamer, J. A., & Yun, J. (2014). Physical educators' beliefs and self-reported behaviors toward including students with autism spectrum disorder. *Adapted Physical Activity Quarterly, 31*(4), 362–376. <https://doi.org/10.1123/apaq.2014-0134>
- Chin, M. (2020). The Zero Reject policy: A way forward for inclusive education in Malaysia? *International Journal of Inclusive Education*. Routledge. <https://doi.org/10.1080/13603116.2020.1846800>
- Chung, W., Chung, S., Edgar-Smith, S., Palmer, R. B., Delambo, D., & Huang, W. (2015). An examination of in-service teacher attitudes toward students with autism spectrum disorder: Implications for professional practice. *Current Issues in Education, 18*(2), 1–12.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education*. New York, NY: Routledge.
- Conallen, K., & Reed, P. (2017). Children with Autism Spectrum Disorder: Teaching conversation involving feelings about events. *Journal of Intellectual Disability Research, 61*, 279–291.
- Corona, L. L., Christodulu, K. V., & Rinaldi, M. L. (2017). Investigation of school professionals' self-efficacy for working with students with ASD: Impact of prior experience, knowledge, and training. *Journal of Positive Behavior Interventions, 19*(2), 90–101.
- Deng, M., & Poon-McBrayer, K. F. (2012). Reforms and challenges in the era of inclusive education: The case of China. *British Journal of Special Education, 39* (3): 117– 122. doi:10. 1111/j.1467-8578.2012.00551x.

- Engstrand, R. Z., & Roll-Pettersson, L. (2014). Inclusion of preschool children with autism in Sweden: Attitudes and perceived efficacy of preschool teachers. *Journal of Research in Special Educational Needs, 14*(3), 170–179. <https://doi.org/10.1111/j.1471-3802.2012.01252.x>
- Florian, L., & Beaton, M. (2017). Inclusive pedagogy in action: getting it right for every child. *International Journal of Inclusive Education, 22*(8), 870–884. <https://doi.org/10.1080/13603116.2017.1412513>
- Furnham, A., & Buck, C. (2003). A comparison of lay-beliefs about autism and obsessive-compulsive disorder. *International Journal of Social Psychiatry, 49*(4), 287-307. <http://dx.doi.org/10.1177/0020764003494006>
- Garrad, T., Rayner, C., & Pedersen, S. (2019). Attitudes of Australian primary school teachers towards the inclusion of students with autism spectrum disorders. *Journal of Research in Special Educational Needs, 19*(1), 58–67.
- Goddard, C., & Evans, D. (2018). Primary pre-service teachers' attitudes towards inclusion across the training years. *Australian Journal of Teacher Education, 43*(6), 122-142. <http://dx.doi.org/10.14221/ajte.2018v43n6.8>
- Gómez-Marí, I., Sanz-Cervera, P., & Tárraga-Mínguez, R. (2021). Teachers' knowledge regarding Autism Spectrum Disorder (ASD): A systematic review. *Sustainability 13*:5097. doi: 10.3390/su13095097
- Gómez-Marí, I., Sanz-Cervera, P., & Tárraga-Mínguez, R. (2022). Teachers' attitudes toward Autism Spectrum Disorder: A systematic review. *Educ. Sci. 12*:138. doi: 10.3390/educsci12020138
- Haimour, A. I., & Obaidat, Y. F. (2013). School teachers' knowledge about Autism in Saudi Arabia. *World Journal of Education, 3*(5). 45-56 <https://doi.org/10.5430/wje.v3n5p4>
- Hair, J. F., Celsi, M. M., Arthur S. P., & Michael, P. (2016). The essentials of business research method, (3 rd edition). Faculty Bookshelf 2, <http://digitalcommons.kennesaw.edu/facbooks2016/2>
- Hunter-Johnson, Y., & Newton, N. G. L. (2014). What does teachers' perception have to do with inclusive education: Abahamian context. *International Journal of Special Education, 29*(1), 143–157.
- Iles A. (2021). Autism Spectrum Disorders. *Primary care, 48*(3), 461–473. <https://doi.org/10.1016/j.pop.2021.04.003>
- Ivanović, I. (2021). Psychiatric comorbidities in children with ASD: Autism centre experience. *Frontiers in Psychiatry, 12*, 1-7. <https://doi.org/10.3389/fpsy.2021.673169>
- Johnson, T. P. (2014). Snowball Sampling: Introduction. *Wiley StatsRef: Statistics Reference Online*. <https://doi.org/10.1002/9781118445112.stat05720>
- Karaolis, O. (2021). Inclusion happens with a puppet: puppets for inclusive practice in early childhood settings. *Drama Australia Journal, 44* (1), 29-42. <https://doi.org/10.1080/14452294.2020.1871506>
- Lauermann, F., & König, J. (2016). Teachers' professional competence and wellbeing: Understanding the links between general pedagogical knowledge, self-efficacy and burnout. *Learning and Instruction, 45*, 9–19. <https://doi.org/10.1016/j.learninstruc.2016.06.006>
- Liu, Y., Li, J., Zheng, Q., Zaroff, C. M., Hall, B. J., Li, X., & Hao, Y. (2016). Knowledge, attitudes, and perceptions of autism spectrum disorder in a stratified sampling of preschool teachers in China. *BMC psychiatry, 16*, 142. <https://doi.org/10.1186/s12888-016-0845-2>
- Low, H. M., Lee, L. W., & Che Ahmad, A. (2020). Knowledge and attitudes of special education teachers towards the inclusion of students with Autism Spectrum Disorder. *International Journal of Disability, Development and Education, 67*(5), 497–514. <https://doi.org/10.1080/1034912X.2019.1626005>
- Lu, M., Zou, Y., Chen, X., Chen, J., He, W., & Pang, F. (2020). Knowledge, attitude and professional self-efficacy of Chinese mainstream primary school teachers regarding children with autism spectrum disorder. *Research in Autism Spectrum Disorders, 72*, 101513.
- Malhotra, N.K. (2008). Essentials of marketing: An applied orientation (2nd ed.). Australia: Pearson Education
- Mavropoulou, S., & Padeliadu, S. (2016). Greek teachers' perceptions of autism and implications for educational practice. *Autism, 4*(2), 173–183.
- Mody, M., & Belliveau, J. W. (2013). Speech and language impairments in autism: Insights from behavior and neuroimaging. *North American Journal of Medicine & Science 5*, 157–161. doi: 10.7156/v5i3p157
- Morgan, D. L. (2008). Snowball sampling. *The SAGE encyclopedia of qualitative research methods, 2*, 815-16.
- Nawi, F.A.M., Tambi, A.M.A., Samat, M.F., Mustapha, W.M.W. (2020). A Review on the internal consistency of a scale: The empirical example of the influence of human capital investment on Malcom Baldrige quality principles in TVET institutions. *Asian People Journal, 3*(1), 19-29. <https://doi.org/10.37231/apj.2020.3.1.121>

- Olley, J. G., Devellis, R. F., Devellis, B. M., Wall, A. J., & Long, C. E. (1981). The Autism Attitude Scale for Teachers. *Exceptional children*, 47(5), 371–372. <https://doi.org/10.1177/001440298104700509>
- Parmeggiani, A., Corinaldesi, A., & Posar, A. (2019). Early features of Autism Spectrum Disorder: A cross-sectional study. *Italian Journal of Pediatrics*, 45(1), 1-8. <https://doi.org/10.1186/s13052-019-0733-8>
- Rad, D., Redeş, A., Roman, A., Ignat, S., Lile, R., Demeter, E., Egerău, A., Dughi, T., Balaş, E., Maier, R., Kiss, C., Torkos, H., & Rad, G. (2022). Pathways to inclusive and equitable quality early childhood education for achieving SDG4 goal-a scoping review. *Frontiers in psychology*, 13, 955833. <https://doi.org/10.3389/fpsyg.2022.955833>
- Roberts, J., & Simpson, K. (2016). A review of research into stakeholder perspectives on inclusion of students with autism in mainstream schools. *International Journal of Inclusive Education*, 20(10), 1084–1096.
- Rodríguez, I. R., Saldaña, D., & Moreno, F. J. (2012). Support, inclusion, and special education teachers' attitudes toward the education of students with autism spectrum disorders. *Autism Research and Treatment*, 2012, 259468.
- Ruble, L. A., Toland, M. D., Birdwhistell, J. L., McGrew, J. H., & Usher, E. L. (2013). Preliminary study of the Autism Self-Efficacy Scale for Teachers (ASSET). *Research in autism spectrum disorders*, 7(9), 1151–1159. <https://doi.org/10.1016/j.rasd.2013.06.006>
- Russell, A., Scriney, A., & Smyth, S. (2022). Educator attitudes towards the inclusion of students with Autism Spectrum Disorders in mainstream education: A systematic review. *Review Journal of Autism and Developmental Disorders*. Springer. <https://doi.org/10.1007/s40489-022-00303-z>
- Segall, M. J., & Campbell, J. M. (2014). Factors influencing the educational placement of students with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 8(1), 31–43. <https://doi.org/10.1016/j.rasd.2013.10.006>
- Shah, K. (2001). What do medical students know about autism? *Autism*, 5(2), 127-133. <http://dx.doi.org/10.1177/1362361301005002003>
- Shalev, R. A., Lavine, C., & Martino, A. D. (2020). A systematic review of the role of parent characteristics in parent-mediated interventions for children with autism spectrum disorder. *Journal of Developmental and Physical Disabilities*, 32(1), 1–21. <https://doi.org/10.1007/s10882-018-9641-x>
- Sharma, U., & Jacobs, D. K. (2016). Predicting in-service educators' intentions to teach in inclusive classrooms in India and Australia. *Teaching and Teacher Education*, 55, 13–23. <https://doi.org/10.1016/j.tate.2015.12.004>
- Sharudin, N., Buhari, S. S., Toran, H., Kamaralzaman, S., & Ilias, K. (2021). Feeding issues among children with Autism Spectrum Disorder (ASD) in Kuala Lumpur: A preliminary qualitative study. *Malaysian Journal of Medicine and Health Sciences*, 17(3), 215-222.
- Singh, S., Kumar, S., & Singh, R. K. (2020). A Study of attitude of teachers towards inclusive education. *Shanlax International Journal of Education*, 9(1), 189–197. <https://doi.org/10.34293/education.v9i1.3511>
- Stone, W. L. (1987). Cross-disciplinary perspectives on autism. *Journal of Pediatric Psychology*, 12(4), 615-630. <http://dx.doi.org/10.1093/jpepsy/12.4.615>
- Su, X., Guo, J., & Wang, X. (2020). Different stakeholders' perspectives on inclusive education in China: Parents of children with ASD, parents of typically developing children, and classroom teachers. *International Journal of Inclusive Education*, 24(9), 948–963. <https://doi.org/10.1080/13603116.2018.1502367>
- Taherdoost, H. (2022). What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of Management Science & Engineering Research*, 5(1), 53–63. <https://doi.org/10.30564/jmser.v5i1.4538>
- Tan, L. W., Hosshan, H., Abd Aziz, N., & Mohd Jamil, M. R. (2024). Parent-Mediated Behavioural Intervention in Children with Autism Spectrum Disorder: A Scoping Review. *International Journal of Disability, Development and Education*, 1–25. <https://doi.org/10.1080/1034912X.2024.2370805>
- United Nations [UN]. (2023, March 18). *Sustainable Development Goals*. <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- United Nations Educational, Scientific and Cultural Organisation (UNESCO). (1994). Salamanca statement and framework for action on special educational needs. Paris, France: United Nations.
- Whiteley, P., Carr, K., & Shattock, P. (2019). Is Autism inborn and lifelong for everyone? *Neuropsychiatric Disease and Treatment*, 15, 2885–2891. <https://doi.org/10.2147/NDT.S221901>

- Wittwer, J., Hans, S., & Voss, T. (2023). Inclusion of autistic students in schools: Knowledge, self-efficacy, and attitude of teachers in Germany. *Autism: The International Journal of Research and Practice*, <https://doi.org/10.1177/13623613231220210>
- World Health Organization [WHO]. (2022, March 30). *Autism Spectrum Disorders*. <https://www.who.int/news-room/fact-sheets/detail/autism-spectrum-disorders>
- Xu, S. Q., Cooper, P., & Sin, K. (2018). The learning in regular classrooms initiative for inclusive education in China. *International Journal of Inclusive Education*, 22(1), 54–73.
- Yada, A., Leskinen, M., Savolainen, H., & Schwab, S. (2022). Meta-analysis of the relationship between teachers' self-efficacy and attitudes toward inclusive education. *Teaching and Teacher Education*, 109, 103521. <https://doi.org/10.1016/j.tate.2021.103521>