

The Preparation, Knowledge and Self Reported Competency of Special Education Teachers Regarding Students with Autism

**Toran, H.^{1*}, Westover, J. M.², Sazlina, K.³, Suziyani, M.¹
and Mohd Hanafi, M. Y.¹**

¹*Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia*

²*Exceptional Education Department, State University of New York College at Buffalo, New York, USA*

³*Faculty of Health Science, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia*

ABSTRACT

Over the last decade the prevalence of autism has increased significantly. This drastic increase has resulted in a significant increase in students with autism in schools. Therefore, it is imperative that special education teachers have the necessary technical skills, general knowledge and self reported competency regarding the educational needs of students with autism in order to meet the unique needs of this diverse population. This study investigated Malaysian special education teachers' self-reported amount of training, knowledge and self reported competency in regards to students with autism. A survey instrument was developed and distributed to 312 special education teachers in Malaysia that asked about their pre-service and in-service preparation in autism, general autism knowledge and self reported competency in providing instruction and support for students with autism. Results indicate that the current teacher preparation programs may be inadequate in preparing teachers with the knowledge and skills necessary to teach students with autism. Additionally, in-service training is not currently addressing current teachers' needs for knowledge and skills related to autism. Implications of these results include the need for further investigation into the autism specific content of both pre-service and in-service training of special education teachers throughout Malaysia.

Keywords: Autism, teacher preparation, teachers' knowledge, teachers' self reported competency and special education

ARTICLE INFO

Article history:

Received: 22 September 2014

Accepted: 21 January 2015

E-mail addresses:

hasnahto@ukm.my, hasna1@yahoo.com (Toran, H.),

jenniferwestover@gmail.com (Westover, J. M.),

sazlina@gmail.com (Sazlina, K.),

suziyanimohamed@yahoo.com (Suziyani, M.),

mhmy65@gmail.com (Mohd Hanafi, M. Y.)

* Corresponding author

INTRODUCTION

Autism is a developmental disorder that results in difficulties with communication and social interaction (American Psychiatric Association, 2013). Students with autism often demonstrate limited interests and/or repetitive behaviour or movement (Wing & Gould, 1979). According to the Center for Disease Control and Prevention (CDC) (2012) in 2008, the incidence of autism was five times higher in boys than in girls. Autism is a lifelong disability and the cause or causes are unknown.

Previous studies on autism suggested that there is an increase in the prevalence of autism (Volkmar *et al.*, 1997; Croen *et al.*, 2002). In the early 1970s, the prevalence of autism was three or four cases in every 10,000 children. However, the latest statistical report based on data from 2008 suggested that prevalence of autism in the United States is 1 in 88 children (CDC, 2012). The Malaysia Ministry of Health (2004) estimates the prevalence of autism in Malaysia is 1:600. However, given the more recent U.S. data, the Malaysian prevalence of autism may be much higher. The cost of lifelong care and education of a person with autism can have an impact on families, communities and countries. A study by Ganz (2006) calculated the lifetime expenditure for a person with autism as 3.2 million U.S. dollars. Furthermore, it is estimated that the total number of individuals with autism in the United States is 1.5 million, resulting in an annual expenditure of 35 billion U.S. dollars (Ganz, 2006).

Inclusion of students with autism in government public schools and training of special education teachers to meet the needs of these students in Malaysia are relatively new in comparison to more developed countries (Hussin *et al.*, 2009; Lee & Low, 2014). These students may be rejected from public government schools and labeled as unfit for standard education (Hussin *et al.*, 2009; Lee & Low, 2014). This leaves families of students with autism in search of private services to provide educational services and supports for their students with autism. In the last decade, however, there has been an expansion of educational practices proven to be effective for students with autism. These practices include behavioural approaches, naturalistic teaching, joint attention, peer mediation and story-based interventions (Iovannone *et al.*, 2002). The United States National Autism Center (2009) describes eleven instructional strategies that are effective for students with autism. The abundance of research and practice literature, along with a growing national campaign to educate the public on the characteristics and strengths of people with autism, leaves one to question why the majority of these students are still denied access to public education in Malaysia. Certainly a lack of preparation and knowledge among special education teachers in Malaysia may be at fault.

Thus, in order to provide effective education for students with autism, special educators need to be instructed in basic knowledge, pedagogy, and evidence-based practices for teaching students

with autism in both inclusive and special education settings (Simpson, 2004). This knowledge must include understanding of the characteristics of autism, how to conduct educational assessments and determine effective interventions to meet individual student needs. In addition, field-based experiences are critical in the development of the technical aspects of the delivery of evidence based practices and behaviour management of this population (National Research Council, 2001; Barnhill *et al.*, 2011).

Simpson (2004) recommended the following components that should be included in the preparation and training of teachers of students with autism: (a) strategies to increase social interaction skills, communication skills and adaptive skills; (b) strategies to support sensory issues; (c) management methods and environmental accommodations; and (d) positive behavioral interventions based on functional assessment. Furthermore, the National Research Council (2001) suggested that family involvement, systematic instruction and specialised curriculum content be included in programmes for students with autism of all ages. Lastly, teachers for students with autism also must have strong collaboration skills to work with general education teachers in providing inclusive education and working closely with parents and other professionals (Scheuermann *et al.*, 2003).

Stone and Rosenbaum (1988) conducted a study on the understanding of autism among parents and teachers in the United States.

The authors found that the respondents had misconceptions about autism. Different understanding between parents and teachers may have a negative impact on their collaborative efforts. Mavropoulou and Padeliadu (2000) conducted a study using a questionnaire developed by Stone and Rosenbaum (1988) to compare perceptions on autism between teachers of general education and special education in Greece. Results of this study showed that both groups were confused about some aspects of autism. However, the special education teachers were better at identifying autism characteristics. Based on the results of this study, suggestions were given to improve in-service training for general education and special education teachers in Greece so that their knowledge and skills regarding autism could be improved.

Schwartz and Drager (2008) adapted a questionnaire by Stone and Rosenbaum (1988) to study the effectiveness of training and the level of knowledge about autism among speech therapists in the United States. The results showed that although the respondents had a sound knowledge about autism characteristics, they were still confused about the diagnostic criteria. The results also showed that the speech-language therapists who were involved in the study did not receive adequate training and thus lack the confidence in their ability to provide services to children with autism. In a similar study by Hendricks (2011), 498 special education teachers in Virginia (United States) were surveyed on their general knowledge regarding

autism and implementation of evidence based practices. The results indicated that respondents had low to intermediate knowledge regarding autism and low to intermediate implementation rates of evidence based practice.

In Malaysia, a study by Philips (2005) examined the level of knowledge about autism among general education teachers and found that teachers in schools in Malaysia were poorly informed about the aspects of cognitive, social and emotional development of children with autism. In more specific, eighty four percent of the respondents in the study could not identify the type or types of support services needed for students with autism. A study by Toran, Mohd Yasin, Tahar and Salleh (2010) also examined the self-reported training, knowledge and confidence of 112 special education teachers regarding students with autism. This study indicated that Malaysian special educators, although confident in their abilities to meet the needs of students with autism, reported a lack of pre-service and in-service training in the subject and had many misconceptions about autism.

This current study is a replication of the earlier study by Toran *et al.* (2010). Both studies examined the self-reported training received by special education teachers in Malaysia regarding autism, their general knowledge about autism and their confidence (now referred to as self reported competency) to educate children with autism. The purpose of this study was to determine the following:

- 1) Do special education teachers agree that their pre-service and in-service training opportunities included content regarding autism and the needs of students with autism?
- 2) Do special education teachers have general knowledge regarding autism?
- 3) How do special education teachers report their competence in educating children with autism?

METHOD

Instrument

A questionnaire by Schwartz and Drager (2008) was adapted and translated into Malay language to identify the level of training, knowledge and confidence of special education teachers in educating children with autism. Originally this questionnaire was used with speech-language pathologists. Adaptation consisted of changes to questions to refer specifically to classroom settings and special education teachers. For this study, the questionnaire consisted of four main areas: respondents' demographic information, teachers' preparation in autism, the level of teachers' knowledge regarding autism, and teachers' self reported competency in teaching children with autism (referred to as confidence in the previous studies). In total, there were 32 items in this questionnaire.

Items in the demographic information section identify factors that may influence the answers of respondents in other parts of the questionnaire. These include gender, age, ethnicity, position, level of education, fieldwork and experience as a teacher. The

section regarding teachers' preparation in autism contains eight questions about teachers' training or the courses attended by the respondents. The respondents answered on a four-point Likert scale. The items in this section had been modified to suit the teacher-training programmes in Malaysia. The teachers' knowledge section consisted of nine questions using a true or false answer format. The final section, teachers' self reported competence in teaching children with autism, contained nine questions about respondents' competence in their ability to educating children with autism. Questions in this section used a four-point Likert scale. For all Likert scale items, a response of 1 indicated strong disagreement, 2 indicated disagreement, a response of 3 indicated agreement with the statement and a response of 4 indicated strong agreement.

Procedure

Three hundred and twelve special education teachers were recruited for this study using purposeful sampling. The respondents were the participants of a workshop on autism organised by the Faculty of Education, Universiti Kebangsaan Malaysia. Sets of questionnaires were distributed to the respondents prior to the workshop and they were given 20 minutes to complete the questionnaire.

RESULTS

This study adopted a quantitative design. Teachers' responses to questionnaire items were analysed to determine areas of need in special education teacher preparation, as

well as current in-service needs for current special education teachers. Themes and categories that emerged from the analysis were presented under three categories: Teachers' Preparation in Autism, Knowledge of Characteristics of Autism, and Teachers' Self Reported Competence in Teaching Children with Autism.

Participants

A total of 312 respondents from the states of Johor, Selangor and the Federal Territory of Malaysia were involved in this study. Majority of the respondents (63.5%) were working in the state of Johor, with the remaining respondents working in the state of Selangor (20.8%) and the Federal Territory of Kuala Lumpur (12.5%). Meanwhile, five respondents (1.6%) were working in the Federal Territory of Putrajaya. Majority of the respondents were female (86.9%) and between the ages of 20 and 40 years (84%). Ninety-two percent of the respondents reported to be Malay.

Placement and Experience. When asked about the positions that they held, most respondents (94.7%) stated that they were special education teachers (72.6%) or teacher coordinators (22.1%) working in primary or secondary school special education integration programmes (94.3%). Over half of the respondents were novice teachers (55.5%), with 66.3% of them reporting 1 to 5 years of special education teaching experience. Furthermore, 77.6% of the respondents reported having 1 to 10 students with autism in their classrooms and 78.2% of the respondents reported

to have had experiences with 1 to 10 students with autism during their teaching careers. Meanwhile, seventy-five percent of the respondents reported to have interest in working with students with autism. The respondents had varying levels of education. Teachers holding a bachelor's degree (49.7%) or a master's degree (22.4) made up the majority of the respondents. The remaining respondents had teaching diplomas (17.0%), teaching certificates (10.6%), higher certificate of education (1.9%) and Malaysian certificates of education (0.6%).

Teachers' Preparation in Autism

As shown in Table 1, 312 participants were asked a series of questions regarding the information and training for working with students with autism in their teachers' preparation programmes. The respondents were asked about the knowledge and skills that were covered in their prior teachers' training and when they had received the training (pre-service or in-service). Items in this section were analysed by calculating the weighted average of respondents' answers.

Knowledge and Skills

The questions in this section addressed knowledge and skills. As shown in Table 2, all the respondents generally disagreed that either their pre-service or in-service training included information regarding any of the knowledge addressed in the questionnaire, with a total mean response regarding all questions across both types of training of 1.76. Furthermore, when broken down by question, the respondents disagreed that they had training in autism that addressed recognising characteristics, assessment, teaching strategies, direct experience or collaborating with parents or other professionals during either pre-service training or in-service training.

Knowledge and Skills

The questions in this section addressed knowledge and skills. As shown in Table 2, all the respondents generally disagreed that either their pre-service or in-service training included information regarding any of the knowledge address in the questionnaire, with a total mean response regarding all questions across both types of training of

TABLE 1
Teachers' Responses to Topics included in Training on Autism

Topic	Participants' Responses (n=312)	
	Pre-service training	In-service training
	Mean	Mean
Recognising the characteristics of autism	2.37	2.00
Assessing children with autism	2.06	1.78
Teaching strategies for children with autism	2.00	1.78
Direct experience (hands-on) with children with autism	2.29	1.83
Collaborating with parents and other professionals	2.00	1.76

1.76. Furthermore, when broken down by question, the respondents disagreed that they had training in autism that addressed recognising the characteristics, assessment, teaching strategies, direct experience or collaborating with parents or other professionals during either pre-service training or in-service training.

Direct experience. One question asked the respondents if they had either pre-service training or in-service that involved direct experience (hands-on) with children with autism. The respondents disagreed that hands-on experience with students with autism was part of their pre-service (M=2.29) or in-service (M=1.83) training.

Pre-Service vs. in-service training. The responses were analysed for any differences in pre-service and in-service training regarding autism. The respondents showed a slightly stronger disagreement

that their in-service training included the knowledge and skills regarding students with autism (M=1.83) versus pre-service training (M=2.14). Furthermore, when analysing the responses by question, a slightly stronger disagreement was always present for the in-service training (Table 1).

Teachers' Knowledge Regarding Autism

The third section of the questionnaire addresses teachers' knowledge regarding autism. Findings regarding the level of teachers' knowledge about autism showed that the respondents had good knowledge about some characteristics of autism (Table 2). The results indicated that the respondents had correct knowledge about communication problems in children with autism (88.5%), *over-sensitivity* and *under-sensitivity* to pain in children with autism

TABLE 2
Teachers' Knowledge of the Characteristics of Autism

Statements	True (%)	False (%)	No response
Children must exhibit impaired social interaction to receive a diagnosis of autism.	237 (75.0%)	67 (21.5%)	5 (1.6%)
Children must exhibit self-injurious behaviour to receive a diagnosis of autism	142 (45.5%)	167 (53.5%)	2 (0.6%)
Children must exhibit behaviour and interests that are repetitive and stereotyped to receive a diagnosis of autism.	297 (95.2%)	11 (3.5%)	3 (1.0 %)
Children must exhibit impaired communication skills to receive a diagnosis of autism.	276 (88.5%)	29 (9.3%)	7 (2.2%)
Some children with autism exhibit over-sensitivity or under-sensitivity to pain.	278 (89.1%)	28 (10.0%)	5 (1.6%)
More boys are diagnosed with autism than girls.	262 (83.0%)	43 (13.8%)	6 (9.1%)
Some children with autism demonstrate uneven gross motor and fine motor skills.	284 (91.0%)	22 (7.05%)	6 (9.1%)
Children with autism never make eye contact.	226 (72.4%)	77 (24.7%)	8 (2.6%)

(89.1%), social interaction problems in children with autism, the higher prevalence of autism in boys (83.0%) and that gross motor skills and fine motor skills are not equal among children with autism (91.0%). Similarly, the act of repetitive stereotyped behaviours and/or limited interests were identified by most respondents (95.2%) as the criteria for autism. However, there were high levels of misinformation regarding the characteristics of autism among the respondents. Self-injurious behaviour is not a diagnostic criterion for autism, but 45.5% of the respondents agreed that self-injurious behaviour must be present in order to receive a diagnosis of autism. Finally, 72.4% of the respondents agreed that children with autism never make eye-contact, even though most children with autism demonstrate this skill to some degree.

Teachers' Self Reported Competency in Teaching Children with Autism

The final section of the questionnaire addressed teachers' self-reported competency regarding autism and their desire for different supports and training opportunities. When analysing the responses to competence regarding determining appropriate intervention goals for students with autism, a mean average of 2.79 was derived (Table 3).

When asked to respond to their confidence regarding the amount of training they had received being sufficient, majority of the respondents (M= 2.28) disagreed that they were confident that their training had prepared them to deliver effective services. Furthermore, the respondents reported only moderate competency (M=2.82) in their comfort level with counseling parents or guardians of students with autism.

TABLE 3
Self Reported Competency in Autism

Statements	Mean Response Participant
I feel competent in my ability to determine appropriate intervention goals for children with autism at all stages of therapy.	2.79
I am comfortable counseling parents and guardians of children with autism.	2.82
I usually like having assistance and direction from another professional or "autism specialist" when developing appropriate programs for children with autism.	3.65
I feel competent I have enough clinical and educational training to deliver effective services to children with autism.	2.28
I feel that I could benefit from receiving additional coursework and training in the area of autism.	3.70
I feel the existence of more post-graduate learning opportunities in the area of autism would be beneficial to the field.	3.64
I feel that schools, in general, could benefit from "autism specialists."	3.68
If I knew that an "autism specialist" was available in my school district, I would use that person as a resource.	3.69
I would be interested in becoming an "autism specialist" even if it meant participating in additional training.	3.32

However, as shown in Table 3, higher levels of agreement were noted when the respondents were asked questions regarding future training and support opportunities. A mean of 3.70 was derived when the respondents were asked if they felt they would benefit from additional coursework and training, while a mean response of 3.32 was obtained when they were asked if they would be interested in becoming "autism specialists". Furthermore, the means of 3.68 and 3.69 were derived when the respondents were asked about their agreement regarding the benefits of autism specialists to the field and school district.

Finally, the respondents were found to support efforts to create opportunities to undergo postgraduate studies in the field of autism, as indicated by a mean average response of 3.64 to this particular question.

DISCUSSION

The drastic increase in the number of students with autism calls for well-trained teachers who can deliver effective instruction to help these children achieve their optimal potential. Teachers need to be able to understand autism and its characteristics, implement educational assessment, design individual education plans, teach systematically and monitor progress. The findings from this study can be used to identify the preparation, knowledge and self-reported competency of special education teachers regarding autism. Additionally, the findings can serve as a starting point for the analysis of content in teachers' preparation programmes

related to autism and to develop pre-service and in-service programmes that prepare teachers effectively. The implications of this study are important to policy makers, school administrators and teacher trainers as guidance to improve teachers' preparation in Malaysia.

Although a majority of the respondents in this study have a bachelor's degree in special education (49.7%) and another 22.4% have a Master's degree in the field, the findings suggest that they do not have a comprehensive knowledge of autism. For example, they do know that students with autism have impairments in communication and social interaction but they seem to have misunderstandings regarding diagnostic criteria of autism when they included injurious behaviour and lack of eye contact as parts of the diagnostic criteria. This finding is similar to those of the studies by Mavropoulou and Padelidi (2000), Hendricks (2011), and Toran *et al.* (2010). In particular, Mavropoulou and Padelidi (2000) reported confusion in Greek special education teachers' knowledge of autism, while Hendricks (2011) reported low to intermediate levels of knowledge of autism among special education teachers in the state of Virginia in the United States. Toran *et al.* (2010) found confusion among special education teachers in Malaysia regarding the diagnostic criteria for autism.

The respondents in this study also reported a moderate level of self-reported competency in determining appropriate intervention goals for these children and delivering services to them. This is alarming

given the fact that the teachers had low level of knowledge on autism and the self report that their pre-service teacher training did not provide adequate information on the characteristics of autism, assessing children with autism, teaching strategies for children with autism, nor did it provide them with direct (field-based) training experience with children with autism and collaborating with parents and other professionals. The previous study by Toran *et al.* (2010) also yielded similar results. Additionally, this finding is similar to that of Hendrick (2011) who reported that special education teachers in the state of Virginia in the U.S. have low to intermediate levels of implementation of effective teaching practices for students with autism.

Therefore, one of the main implications of this study is the need to improve special education teacher training in order to increase the level of knowledge in autism and effective use of evidence based teaching strategies. Hendricks (2011) also highlighted the need for increased content related to autism and evidence based practices during pre-service training. Scheuermann, Webber, Boutot, and Goodwin (2003) criticised teacher training programmes in the U.S. that did not focus on teaching strategies for specific disabilities and instead only covered special education in general. It appears that special education teacher training programmes in Malaysia also need to specifically look at the content of these programmes, as they do not include in-depth topics on autism or if these topics are included. Furthermore, opportunities for

direct experience and hands-on activities with these children need to be provided to these teachers so that they are able to transfer theory into practice.

The findings of this study also highlight the importance of in-service training. Majority of the respondents (77.6%) have students with autism in their classroom but lack the experience and self reported a lack of training. Therefore, there is a dire need for effective in-service training. Novice teachers made up 55.5% of the respondents, while 66.3% of them reported 1-5 years of experience as special education teachers. However, these respondents also reported that the in-service teacher training had not been able to compensate the inadequate training they received during the pre-service period. In addition, due to the rapid growth of research and evidence based practice regarding instructional strategies and interventions for students with autism, the importance of in-service training for teachers is critical. Evidence suggests that attention must be paid to the quality and effectiveness of in-service training for teachers. Scheuermann, Webber, Boutot, and Goodwin (2003) suggested that consultations might provide stronger lasting effects on teaching practices than other methods of instruction like typical workshops. In addition, Hendricks (2011) suggested supervision, feedback and consultation, while Barnhill (2011) proposed distance learning via on-line instruction.

Positive findings of this study include the willingness of the respondents (74%) to have students with autism in their classroom,

the desire to undergo further training and to accept support from autism specialists, as well as the belief that specialists would benefit their instruction and the field in general. With these encouraging findings, there is a high probability that in-service training may be effective in enhancing the knowledge and skills of these teachers.

However, there are some limitations in this current study that should be taken into consideration. The respondents in this study were purposively recruited and limited to those from a few states in this country. Furthermore, the respondents in this study were attending a workshop on autism and might have been more interested and educated in autism than the general special education teacher population in Malaysia. Therefore, these findings may not be generalised to the population of special education teachers in Malaysia. Another limitation is that the research questionnaire did not seek to investigate teachers' knowledge and efficiency in specific instructional strategies known to be effective with students with autism.

Considering the findings and limitations of this study and other similar studies, further examination of the issues in teacher preparation related to autism in Malaysia is warranted. Further research should explore the knowledge and application of evidence-based interventions and strategies of special education teachers and where this knowledge was obtained. Moreover, further investigation of the self-reported competency of special education teachers in the application of evidence based practices

is necessary. This kind of information will be able to guide policy makers and teacher trainers in developing effective teacher preparation programmes for future teachers of students with autism. Barnhill *et al.* (2011) proposed that these programmes contain clearly defined minimum standards for personnel qualifications and experience in order to ensure that teachers are equipped with requisite knowledge and skills needed to teach effectively.

Students with autism are perhaps the fastest growing population of students with disabilities in schools today. Furthermore, the range of needs of the population of students with autism is large; including students with unique and diverse educational needs. However, it appears that there is a global need for improved special education teacher education programmes to meet the needs of these students. Until institutions of higher education are able to design programmes that adequately prepare special educators to teach this diverse population, students with autism will continue to struggle to reach their full potential.

REFERENCES

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th Ed.). USA: APA.
- Barnhill, G. P., Polloway, E. A., & Sumutka, B.M. (2011). A survey of personnel preparation programs in autism spectrum disorders. *Focus on Autism and Developmental Disabilities*, 26(2), 75-86.
- Center for Disease Control and Prevention, National Center on Birth Defects and Developmental Disabilities (2012). *Prevalence of autism*

- spectrum disorders - autism and developmental disabilities monitoring network, 14 Sites, United States, 2008*. March, 2012.
- Croen, A., Grether, J. K., Hoogstrate, J., & Selvin, S. (2000). Descriptive Epidemiology of autism in California population: Who is at risk? *Journal of Autism and Developmental Disorders*, 32(3), 217-224.
- Ganz, M. (2006). "The Costs of Autism" *Understanding Autism: From Basic Neuroscience to Treatment*. USA: Harvard.
- Hendricks, D. (2011). Special education teachers serving students with autism: A descriptive study of the characteristics and self-reported knowledge and practices employed. *Journal of Vocational Rehabilitation*, 35(1), 37-50.
- Lee, L. W., & Low, H. M. (2014). The evolution of special education in Malaysia. *British Journal of Special Education*, 41(1) 42-58.
- Mavropoulou, S., & Padelidu, S. (2000). Greek teachers' perceptions of autism and implications for educational practice: A preliminary analysis. *Autism*, 4(2), 173-183.
- National Research Council. (2001). *Educating children with autism*. U.S.: National Academy Press.
- Quek, A. H., & Cheong, L. C. (2009). *Policy into practice: The challenge for special education in Malaysia*. Paper presented at the 11th International Conference on Experiential Learning, Sydney, Australia, 8-12 December.
- Philips, S.C. (2005). *Tahap Tahap Pengetahuan Mengenai Sindrom Autisme Di Kalangan Guru Kelas Biasa*. Retrieved on May 8, 2013 from <http://rmc.upsi.edu.my/v2/ewacana/Sindrom.htm>.
- Scheuermann, B., Webber, J., Boutot, A., & Goodwin, M. (2003). Problems with personnel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disorders*, 18(3), 197-206.
- Schwartz, H., & Drager, K.D.R. (2008). Training and Knowledge in Autism Among Speech-Language Pathologists: A Survey. *Language, Speech & Hearing Services in Schools*, 39(1), 66-77.
- Simpson, R. (2004). Finding Effective Intervention and Personnel Preparation Practices for Students with Autism Spectrum Disorders. *Exceptional Children*, 70(2), 135- 144.
- Stone, W. L., & Rosenbaum, J. L. (1988). A comparison of teacher and parent views of autism. *Journal of Autism and Developmental Disorders*, 18(3), 403-414.
- Toran, H., Mohd Yasin, M. H., Tahar, M. M., & Salleh, N. (2010). Tahap latihan, pengetahuan dan keyakinan guru-guru pendidikan khas tentang autisme. ['Special educators' level of training, knowledge and confidence regarding autism]', *Jurnal Pendidikan Malaysia [Malaysian Education Journal]*, 35(2), 19-26.
- Volkmar, F. R., Klin, A., & Cohen, D. J. (1997). Diagnosis and classification of autism and related conditions: Consensus and issues (2nd Ed.). In D.J. Cohen & F.R. Volkmer, *Handbook of autism and pervasive developmental disorders*. USA: Yale University.
- Wing, L., & Gould, J. (1979). Severe Impairments of Social Interaction and Associated Abnormalities in Children: Epidemiology and Classification. *Journal of Autism and Developmental Disorders*, 9, 11-29.