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Competences of Preschool Parents and Teachers in the Early Detection of Preschool Children at Risk of Dyslexia

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Abstract
Children at risk for dyslexia experience disorders that affect their reading ability. These disorders occur throughout life, resulting in their lives not being aligned with normal children. Thus, this study aims to identify the competencies of parents and preschool teachers in terms of knowledge, skills, and attitudes towards the early detection of preschool children at risk of dyslexia. A quantitative design using a questionnaire instrument was used in this study. A total of one hundred and eleven preschool teachers and eighty parents with children in preschool were involved in this study. The overall findings indicated that knowledge there was no significant relationship between the competencies of parents and preschool teachers in terms of knowledge, skills, and attitudes towards the early detection of preschool children at risk of dyslexia. This study shows that parents and preschool teachers have a moderate level of competence. The study's findings also show that the majority of preschool children have no early detection of Dyslexia. The fact that is the early detection can bring well-being to these children's lives in the future

Keywords: Dyslexia, Children, Preschool, Early Detection, Preschool Teachers, Parents,

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INTRODUCTION

Although various fields of knowledge such as cognitive science, genetics, neuroscience, and education have conducted studies on dyslexia, the issue of dyslexia continues to be on the agenda worldwide (Jap et al., 2017). More worryingly, the number of dyslexic children increases yearly (Butterworth & Kovas, 2013). The prevalence of dyslexic children worldwide ranges from 4% to 8%, while Ferrer et al (2015) estimated that dyslexic children are between 17% to 21% worldwide. The higher estimate of such prevalence is due to the fact that dyslexia also often occurs concurrently with other disabilities such as Attention Deficit Hyperactivity Disorder (ADHD) and Autism (Asberg & Dahlgren, 2012; Germanò et al., 2010; International Law Book Services, 2001).

Recognizing this fact, a large number of scholars in various disciplines agree that dyslexia is synonymous with a reading disability (Pennington et al., 2019). On the other hand, the Ministry

Of Education Malaysia (2004) defines dyslexia as a child who has the same mental intelligence or more than normal children but faces serious difficulties in mastering the skills of spelling, reading, writing, and counting. Dyslexic children also often face problems in the academic as well as personal domains. There are reports mentioning dyslexic children experiencing anxiety and depression (Mammarella et al., 2016; Mugnaini et al., 2009) and general deterioration in various mental health and other psychological developments. In turn, Livingston et al (2018) impact school-related performance and achievement (Stevenson & Graham, 2011).

There are still few studies conducted related to dyslexia among preschool children. Furthermore, many studies have focused on medicine and information technology among children with dyslexia (Adamu & Soykan, 2019; Khairunnisa et al., 2022). The same situation occurs in Malaysia. Although dyslexia was gazetted in the Education Act 1996 (Act 550) Chapter 8 a decade ago and the Education (Special Education) Regulations 2013, studies on dyslexia for preschool children are limited. In addition, previous studies have talked more about the importance of early detection but did not specifically tell the exact age for dyslexia to be detected. For example, Horowitz et al (2017) stated that dyslexia could be identified when a child is in year one of schooling. However, (Lapkin, 2018) says that teachers can make early detection while children are in preschool. Balikci & Melekoglu (2020) pointed out that the delay factor in the early detection process can make Dyslexia difficult to overcome.

The next problem is preschool children who graduate from school without the ability to read fluently. Ramli et al (2016) showed that these children are considered slow to learn and will often be marginalized. They are unable to follow the school syllabus, and dyslexia-related issues are very important to be addressed appropriately. (Kaisar, 2020) stated that early detection to identify children at risk of dyslexia is critical to obtaining appropriate interventions to help them succeed in the future.

Ramli et al (2019) have studied the level of knowledge of preschool teachers on dyslexia. The study sample consisted of 138 preschool teachers in Hulu Langat district, Selangor. He conducted the survey using an instrument known as the "Knowledge and Beliefs about the Developmental Dyslexia Scale" (Soriano-Ferrer et al., 2016). The findings of their study indicate that many preschool teachers have a high level of knowledge about the general understanding of dyslexia. Yuzaidey et al (2018), in turn, conducted a systematic literature review on treatment for dyslexic children. The treatment specifically focuses on how children can be helped academically. The article reviewed that most treatments focused on aspects of language such as word mastery, alphabet recognition, and writing skills.

Next, Yazid & See (2015) conducted a study to determine parents' level of understanding of preschool children toward dyslexia. This survey study was conducted in the Jeli district, Kelantan. The results of their study found that the majority of parents in rural areas have a moderate level of understanding of dyslexia. These parents stated that they had heard about dyslexia in general through the press, television, and friends. However, they report that parents still lack understanding in terms of the causes, identification, and treatment of dyslexia. To date, there are very few studies conducted on dyslexia for preschool children in Malaysia. Thus, the objective of this study was to (a) identify the competencies of parents and preschool teachers in the early detection of children at risk of dyslexia and (b) identify the relationship between the competencies of parents and preschool teachers in the early detection of children who are at risk for dyslexia.

Research Questions

RQ1: *What are the competencies of parents and preschool teachers in terms of knowledge in the early detection of preschool children at risk of dyslexia?*

This study began to identify the knowledge of parents and preschool teachers in identifying preschool children who are at risk of dyslexia and children who are not at risk of dyslexia. In other words, this study wanted to know how well parents and preschool teachers

could distinguish between children who were at risk of dyslexia and children who were not. These resources would help them to better support those children who were at risk of developing dyslexia in the future.

RQ2: *What are the competencies of parents and preschool teachers in terms of skills in the early detection of preschool children at risk of dyslexia?*

This study continued by examining the skills between the classification status of children at risk for dyslexia. The abilities of parents and preschool teachers in early detection risk for dyslexia were examined in this research, which went on to examine the differences in the categorization statuses of the children. The resulting percentage can determine the level of parenting skills in making early detection of dyslexia for preschool children. It is possible to measure the degree of parental abilities in detecting dyslexia in preschool children based on the percentage that was obtained.

RQ3. *What are the competencies of parents and preschool teachers in terms of attitudes in the early detection of preschool children at risk for dyslexia?*

This study examined whether parents and preschool teachers were prepared to implement early detection of children at risk for dyslexia. To be more specific, the goal of this study was to determine whether or not parents and preschool instructors would be willing to use early detection tactics on children who were at risk of developing dyslexia in the future in order to prevent future dyslexia. The results of this study showed their attitudes towards their readiness for the detection of risk for dyslexia.

RQ4. *Is there a relationship between the knowledge, skills, and attitudes of parents and preschool teachers in making the identification of preschool children?*

Variables such as knowledge, skills, and attitudes were used to predict the possible relationship between parents and preschool teachers in making the identification of preschool children at risk for dyslexia. When estimating the potential relationship between parents and preschool teachers, elements such as knowledge, skills, and attitudes were taken into account. This assisted in the identification of preschool children who were at risk for dyslexia, which was beneficial.

History of Dyslexia

The history of Dyslexia is a long process and is still under debate to this day. In 1676, Dyslexia was known to be illiterate by a physician named John Schmidt, and he concluded that these illiterate students were illiterate students. In 1872, William Broadbent stated that an illiterate is an individual who has good communication skills but cannot read and has difficulty naming objects seen. Five years later, in 1877, Adolf Kussmaul, a German neurologist, began to improve the definition of illiteracy when he discovered that one of his patients, who was intelligent and had a good educational background, had difficulty reading.

Next, Rudolf Berlin, an ophthalmologist, introduced the term Dyslexia in 1887. He stated that Dyslexia was not caused by a problem with the brain system but by the difficulty of decoding written symbols. William Pringle Morgan's study in 1896 found that a 14 -year -old student also had a normal intellectual level and a good level of vision but failed to read. In fact, the study also found that the student can be very intelligent if the learning instructions are verbal. In addition, the findings of his study also found that dyslexia occurs due to the genetics. There have been six cases where one family for two generations has had symptoms of dyslexia.

Hinshelwood 1902 also agreed with Rudolf Berlin. In fact, he also suggested that visual memory for letters and words be introduced to children with Dyslexia symptoms. The "one to one" approach to reading is one of the interventions to overcome the problem of dyslexic children. In 1925, Samuel Orton replaced the term illiteracy with strephosymbolia when the majority of children with reading difficulties resulted from the reversal of letter symbols and words. If examined, the words illiteracy, dyslexia, and strephosymbolia have been introduced by neurologists and physicians with a focus on visual problems alone. This has created inconvenience

to researchers and academics in education as it focuses on medical models instead of addressing educational issues.

History of Dyslexia in Malaysia

Special education began in the 20s era when Schools for the Visually Impaired and Schools for the Deaf were opened through the involvement of volunteers. Subsequently, the Education Act 1996 (Act 550) Chapter 8 was created to provide all special education students with educational opportunities. Thus, the Ministry of Education Malaysia, in collaboration with the Special Education Division, began to introduce dyslexia programs. The first pilot program took place in 2004 when Sekolah Kebangsaan Taman Tun Dr. Ismail (2) chose to implement a dyslexia program. A total of seven students and two Malay language teachers have started the program.

After that, the Ministry of Education Malaysia expanded it to 31 school options nationwide. Its main focus is to provide educational services to all, especially in rural areas. In addition, the increase in the number of these classes is due to the demands of parents who cannot afford tuition services as well as expensive screening tests (Banseng et al., 2021). Since the establishment of this program, the number of children with dyslexia who receive an education is increasing year by year according to the programs provided, namely in Special Education Schools, Integrated Special Education Program, and Inclusive Education Program. Table 1 shows the number of dyslexia by the program for 2021 in Malaysia.

Table 1 Number of Dyslexia by Program for 2021

Type of Disability	SES				ISEP				IEP				Total
	Preschool	Primary	Secondary	Total	Preschool	Primary	Secondary	Total	Preschool	Primary	Secondary	Total	
Dyslexia Specific Learning Disabilities	2	42	161	205	12	5499	4956	10467	2	1325	1566	2893	13565

Source: Ministry of Education Malaysia (2021)

Early Detection of Dyslexia

In Malaysia, dyslexia can be identified using the Dyslexia Checklist Instrument (DCI) developed by the Special Education Division, (Ministry Of Education Malaysia, 2004).DCI identifies three aspects, namely (i) the level of proficiency in spelling, reading, and writing, (ii) the existing strengths of dyslexia, and (iii) the specific characteristics of dyslexia found in students.

The implementation of DCI is usually done after students have attended compulsory schooling in primary schools for not less than six months. Although formal education in this country starts as early as four (4) years old, which is preschool education, the level of proficiency in spelling, reading, and writing is very challenging to detect. Dyslexia features can be detected in Table 2.

Table 2. Characteristics of Dyslexia

Proficiency level in spelling, reading, and writing	**Strength**	**Weakness**

• difficulty spelling simple words, • spelling words that have nothing to do with the original word, • mistakenly distinguishing similar alphabet sounds in syllables, • lagging in reading ability compared to peers, • facing difficulty in reading, • finding long reading sentences challenging, • showing untidy written work, • experiencing challenges when coping down information, • finding written words challenging to read, • writing slowly compared to peers and • writing upside down	• good speech, • can answer questions orally well, • can produce story-based stories, • interested in new things, • have verbal abilities comparable to peers • has the potential to succeed but low academic achievement, • possess many ideas, • a creative person, • can adapt to socializing • act according to the situation, • able to make expectations • has good general knowledge and • high curiosity	• low self-esteem problems, • give reasons to avoid doing schoolwork involving reading and writing, • Attitude problem, • short concentration, • confused with the concept of direction, • difficulties with sequential concepts, • problems in time management, • difficulty remembering long instructions, • hasty while acting and • careless in movement

Source: Ministry Of Education Malaysia (2004)

A medical practitioner should obtain further confirmation if the DCI results indicate that the student is at risk for dyslexia. This medium is in line with the Education (Special Education) Regulations 2013 (International Law Book Service), requirements, which require special education students to be certified in advance by a medical practitioner.

METHODS

The design of this study is quantitative by using a questionnaire instrument. The researcher used a questionnaire instrument adapted from the study of Creswell (2014) which showed the Level of Knowledge, Skills, and Attitudes of Secondary School Teachers Towards the Use of Web 2.0 in Malay Language Teaching. A total of 191 study participants consisting of 80 parents and 111 preschool teachers with preschool children in Perak, were involved in this study. The rationale for the selection of Perak is because (i) the participants are capable and willing to give ideas, (ii) willing to commit to the interview, and (iii) they have good communication skills. The information of the study participants is as in Table 3.

Table 3 Region information

No	**Region**	**Preschool type**			**Total**
		National School	Chineese School	Tamil School	
1	Larut Matang dan Selama	45	3	3	51
2	Batang Padang	37	6	6	49
3	Kinta Utara	32	11	6	49
4	Kuala Kangsar	38	4	0	42
Total					191

FINDING AND DISCUSSIONS

Finding

Findings of RQ1

In this study, the RQ1 was “What are the competencies of parents and preschool teachers in terms of knowledge in the early detection of preschool children at risk of dyslexia?”. Table 4 shows the mean scores for the knowledge of parents and preschool teachers in the early detection of preschool children at risk of dyslexia.

Table 4 Knowledge of parents and preschool teachers in the early detection of preschool children at risk for dyslexia

Dependent Variable	Categories	Mean	Std Error	95% Confidence interval	
				Lower Bound	Upper Bound
Knowledge	Parents	2.58	.502	19.597	21.578
	Preschool Teachers	2.59	.426	20.754	22.435

From Table 3, it can be seen that the mean of parental knowledge in the early detection of preschool children at risk of dyslexia is 2.58, and the standard deviation is 0.502. The mean for preschool teachers is 2.59, and the standard deviation is 0.426. Overall, the items for the level of knowledge of parents and preschool teachers in the early detection of preschool children at risk of dyslexia were moderate.

Findings of RQ2

In this study, the RQ2 was “What are the competencies of parents and preschool teachers in terms of skills in early detection of preschool children at risk of dyslexia?”. Table 5 shows the mean scores for the skills of parents and preschool teachers in the early detection of preschool children at risk of dyslexia.

Table 5 *Skills of parents and preschool teachers in early detection of preschool children at risk for dyslexia*

Dependent Variable	Categories	Mean	Std Error	95% Confidence interval	
				Lower Bound	Upper Bound
Skills	Parents	2.43	.532	19.387	21.488
	Preschool Teachers	2.26	.452	19.370	21.153

From Table 4, it can be seen that the mean of parental skills in the early detection of preschool children at risk of dyslexia is 2.43, and the standard deviation is 0.532. The mean for preschool teachers is 2.26, and the standard deviation is 0.452. Overall, the items for the skill levels of parents and preschool teachers in the early detection of preschool children at risk for dyslexia were moderate.

Findings RQ3

In this study, the RQ3 was “What are the competencies of parents and preschool teachers in terms of attitudes in the early detection of preschool children at risk of dyslexia?". Table 6 shows the mean scores for the attitudes of parents and preschool teachers in the early detection of preschool children at risk of dyslexia.

Table 6 Attitudes of parents and preschool teachers in early detection of preschool children at risk for dyslexia

Dependent Variable	Categories	Mean	Std Error	95% Confidence interval	
				Lower Bound	Upper Bound
Attitudes	Parents	2.30	.335	20.639	21.961
	Preschool Teachers	2.86	.284	20.304	21.426

From Table 5, it can be seen that the mean of parental attitudes in the early detection of preschool children at risk of dyslexia is 2.30, and the standard deviation is 0.335. The mean for preschool teachers is 2.86, and the standard deviation is 0.284. Overall, the items for the level of attitudes of parents and preschool teachers in early detection of preschool children at risk for dyslexia were moderate.

Findings RQ4

In this study, the RQ4 was "Is there a relationship between the knowledge, skills, and attitudes of parents and preschool teachers in making the identification of preschool children?". Table 7 shows the relationship between the knowledge, skills, and attitudes of parents and preschool teachers in making the identification of preschool children.

Table 7 The relationship between the knowledge, skills, and attitudes of parents and preschool teachers in making the identification of preschool children.

Dependent Variable	Categories	Sum of square	df	Mean Square	F	Sig	Partial Eta Square
Knowledge	Contrast	47.154	1	47.154	2.339	.128	.012
	Error	3810.144	189	20.159			
Skills	Contrast	1.444	1	1.444	.064	.801	000
	Error	4285.111	189	22.673			
Attitudes	Contrast	8.803	1	8.803	.980	.323	.005
	Error	1697.79	189	8.983			

Based on the above output, the significant value of p> 0.05, for all aspects of knowledge (sig value = 0.13), skills (sig value = 0.80) and attitude (sig value = 0.32). So, it can be concluded that all the dependent variables are homogeneous or equal. Since the variance is homogeneous, this means that the conditions in the two-way ANOVA test have been met. The significant value is more than 0.05; this means that there is no significant relationship between the competencies of preschool teachers and parents in terms of knowledge, skills, and attitudes towards the early detection of dyslexia for preschool children at risk of dyslexia.

Discussion

Competencies of parents and preschool teachers in the early detection of children at risk of dyslexia

The level of competence identified in terms of knowledge, skills, and attitudes of parents and preschool teachers in this study is a moderate level in identifying preschool children at risk of dyslexia. One of the critical findings in this study is that there is confusion of knowledge about dyslexia. For example, the majority of studies state that they find it difficult to identify children at

risk for Dyslexia. The Malaysian Government, through the Special Education Division (2013), has categorized dyslexia as students with learning difficulties. This statement has added to the confusion among stakeholders, teachers, and individuals involved with dyslexia. These findings mean that the current definition of dyslexia is still less accurate in explaining the true meaning of dyslexia.

Furthermore, this study found that the majority of parents and preschool teachers lack training related to dyslexia early detection instruments. These findings are in contrast to recent research by Ramli et al (2019)showed that preschool teachers have a general understanding of dyslexia. He and his colleagues also noted that preschool teachers are skilled in dyslexia, its causes, risks, behaviors, complications, and effects of dyslexia on mental health. These differences in findings are most likely due to study participant factors. All preschool teachers in this study worked in national schools, while Ramli's study participants consisted of preschool teachers in private schools. These private preschool teachers gain knowledge about dyslexia from short-term courses, seminars, and lifelong learning programs, while preschool teachers in national schools are less exposed to dyslexia courses. Therefore, there may be a misunderstanding about dyslexia because this group lacks knowledge of dyslexia.

The study also found that parents and preschool teachers in Malaysia are less prone to dyslexia. Study participants stated that the attitude of schools that do not provide dyslexia-related programs makes it difficult for them to obtain information related to dyslexia. The fact is, parents and preschool teachers are at the forefront of helping these children deal with their problems. This view is in line with (Youman & Mather, 2015) statement that parents and preschool teachers are an important group to learn about dyslexia because most of the time, children are with them.

The attitude of administrators and schools that are less helpful in obtaining Dyslexia early detection instruments for parents and preschool teachers makes it difficult for them to identify children at risk for Dyslexia. This further reinforces the survey findings (Malchow & Smith, 2015; Moats, 2009; Sicam et al., 2021) that the majority of parents and preschool teachers nationwide are still not ready to detect dyslexia among children or preschoolers. The reason is that children are slow to make the screening. Indirectly, children have had to struggle with dyslexia for a long period of time and, in turn, contributed to the increasing number of students suffering from illiteracy.

The Relationship Between the Competencies of Parents and Preschool Teachers in the Early Detection of Children at Risk of Experiencing

There is no significant relationship between the competencies of preschool teachers and parents in terms of knowledge, skills, and attitudes toward the early detection of dyslexia for preschool children at risk of dyslexia. The study also found increased psychosocial challenges for parents, teachers, and dyslexic children. This is because there is no enforcement of the dyslexia education policy for preschool children in Malaysia. This situation is different in developed countries. For example, the United States already has special laws requiring early detection, intervention, and training of dyslexia-related teachers in all public schools (Odegard et al., 2020; Sarte et al., 2021). The implications, learning needs, and well-being of Dyslexic children can be met. The study also found that there are still parents who live in denial of accepting the condition of dyslexic children, and they think these kids have a vague future. Such parental attitudes become a barrier for their child to be able to understand learning like any other typical child.

Another important finding in this study is that parents, preschool teachers, and children are burdened as a result of not getting early detection. For example, a preschool teacher is not only loaded with a crowded class of students and clerical tasks that need to be done but also needs to create additional lessons to help children who are slow to read. These are all among the factors that contribute to stress and the risk of causing depression among preschool teachers. If left unchecked, the country will not be able to produce a quality and excellent society. In addition,

there are working parents who face mental stress. This is because they have to spend more time helping the children complete their school work. Furthermore, they are fatigued while working.

The implication is that parents are easily upset and start hitting the child if the child is slow to complete the assignment given by the preschool teacher. This further strengthens the findings of the study of (Alias & Dahlan, 2015). Therefore, parents need support to alleviate the burden they face. Next, parents also face economic burdens. Some parents already suspect their child is suffering from dyslexia symptoms but are having financial difficulties getting early detection in the hospital. Ministry Of Education Malaysia (2004) acknowledges that most of the instruments in hospitals are from abroad and are copyrighted. This means the amount paid to get an early detection service is expensive. In the context of this study as well, the findings of the study also found that preschool children also had to bear the burden of not getting early detection. These children often realize that their classmates can read better, complete assignments on time, and not take long to learn something. Over time, this will damage their self-confidence and cause them to withdraw or become passive. The findings of this study support the highlight of Lynam's (2018) study that children who experience dyslexia symptoms and do not get support will begin to stop doing social activities.

Finally, the findings of this study found that preschool children in Malaysia currently do not have early detection of dyslexia. Indirectly, the preschool curriculum in the current education system is not able to meet the needs and ability levels of children at risk of dyslexia. Based on the study's findings, parents and preschool teachers hope that preschool children can experience early detection of dyslexia. The findings of this study further reinforce the results of previous studies that early detection tests can be conducted on preschool children (Arwin et al., 2022; Lapkin, 2018).

CONCLUSION

It is important to know about the latest dyslexia-related competencies for preschool children based on the views of parents and preschool teachers. Based on the findings of the study, it is clear that parents and preschool teachers not only have the same knowledge but also experience confusion over the definition and difficulty in identifying preschool children at risk of dyslexia. Adding to the concern, the findings of this study found that parents and preschool teachers were burdened with preschool children who did not get early detection of dyslexia. Thus, this study suggests that the development of an early dyslexia detection instrument for preschool children be established. This early detection is important to help the child's learning later. In addition, physicians can use reports from these detections as a reference to determine appropriate interventions and placements for these children.

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