

Title of the paper: Primary school teachers' readiness in identifying children with dyslexia: A national survey in Sri Lanka

Authors:

W. A. Nadhee N. Peries

University of York

nnperies@gmail.com

Bimali Indrarathne

University of York

bimali.indrarathne@york.ac.uk

B. Deepal W. Jayamanne

University of Kelaniya, Sri Lanka

Thimathi D. Wickramasekara

Ministry of Health, Sri Lanka

K. Anoma C. Alwis

Open University of Sri Lanka

Achala U. Jayatilleke

University of Colombo, Sri Lanka

**Primary school teachers' readiness in identifying children with dyslexia:
A national survey in Sri Lanka**

Abstract

Primary school teachers should be able to identify struggling learners who may have dyslexia type learning difficulties, in order to facilitate early intervention. Considering this importance, a nationwide survey was conducted in Sri Lanka with 705 primary school teachers among randomly selected schools in order to investigate teacher readiness to identify learners with dyslexia. Teacher readiness was measured based on three variables (1) teachers' self-reported basic knowledge on dyslexia, (2) their self-reported awareness of local tools and processes used to identify dyslexia and (3) their self-reported attitudes towards engaging in identifying dyslexia. Data was gathered through a structured questionnaire. Logistic regression analyses revealed that the participants had minimal readiness to engage in identifying learners with dyslexia. However, most of them showed positive attitudes towards actively engaging in identifying dyslexia.

Key words: dyslexia, identifying, knowledge, awareness, attitudes, readiness

Introduction

Dyslexia is a difficulty related to language processing abilities (Lawrence, 2009). Those with dyslexia may face difficulties in reading, spelling, pronunciation and phonological processing. Dyslexia is categorised under the umbrella term Specific Learning Difficulties (SpLDs) due to the fact that those who are dyslexic also show

features common to other learning difficulties (Kormos, 2017). For example, those who have one or more learning difficulties may have issues in memory, organisational skills, concentration, and attention control and these features are common to dyslexic learners too.

Most children with dyslexia show signs from early ages and early identification is vital to provide necessary support (Kormos & Smith, 2012). There can be several long-term negative consequences such as poor educational outcomes (e.g., Ricketts, Sperring, & Nation, 2014), poor physical and mental health (Dewalt, Berkman, Sheridan, Lohr, & Pignone, 2004) and reduced employment opportunities (OECD, 2013), if early identification is not made and necessary support is not provided. There is also growing evidence that early intervention is more effective (Catts, Nielsen, Bridges, Liu, & Bontempo, 2015) than late intervention (Wanzek & Vaughn, 2007). However, as Rose (2009) highlights, the screening tests available are unreliable to do blanket screening of all children who enter school. Therefore, a more practical option that Rose suggests is to observe children's pre- and early reading activities and compare their performance with their peers. Teachers' involvement in observing children's reading activities and identifying learners with dyslexia type difficulties is vital in this regard. For example, in the UK, when teachers identify learners with dyslexia type difficulties, they refer such children to dyslexia specialists for formal assessment (Carroll, Bradley, Crawford, Hannant, Johnson, & Thompson, 2017). However, previous research highlights that teachers' general understanding of dyslexia or other SpLDs is minimal in many contexts in the world and therefore their ability to identify learners with dyslexia is questionable (e.g., Author 2, 2019). In addition, misconceptions and limited understanding of dyslexia and its features

may lead to misidentification, which is likely to cause anxiety among learners and their parents (Colenbrander, Ricketts, & Breadmore, 2018).

Minimal attention has been paid in research so far to directly investigating teacher readiness to identify learners with dyslexia. In contexts such as Sri Lanka, research on SpLDs is scarce and the limited existing studies (e.g., Author 2 & Hettiarachchi & Das, 2014) highlight that teachers in Sri Lanka seem to have minimal understanding of dyslexia or other learning difficulties. Considering the importance of teachers being able to recognise learners with dyslexia to facilitate early intervention, and also the danger of them misidentifying cases, this study was conducted with the aim of analysing primary school teachers' readiness to identify learners with dyslexia in the Sri Lankan context. In order to investigate this, participating teachers' self-reported basic knowledge on dyslexia, their self-reported awareness of local tools and processes used for identifying dyslexia and their self-reported attitudes towards engaging in identifying dyslexia were investigated using a questionnaire.

Literature review

Evaluating learners who show dyslexia type difficulties involves identification, screening, testing, diagnosis and other information gathering (International Dyslexia Association, 2020). When screening, it is necessary to systematically assess cognitive abilities related to language processing in addition to assessing behavioural patterns. In standard tests, two domains of cognitive abilities are screened (Lawrence, 2009). One is the verbal domain which includes phonological awareness, verbal working memory and phonological processing speed. Under the visual domain, visual working memory, visual processing accuracy and visual processing speed are assessed. In addition to these cognitive abilities, other features such as motor coordination weaknesses that affect overall

language performance are screened, as issues in handwriting and speed of writing may be determined based on fine and gross motor difficulties (ibid). There are standard screening tests available to assess the above mentioned cognitive and motor-control abilities. Some of them are the *Phonological Assessment Battery* developed by Fredrickson, Frith and Reason (1997) and the *Phonological Abilities Test* developed by Muter, Hulme, and Snowling (1997). Such standard tests are used by trained dyslexia assessors and dyslexia screening centres. Those who use these tests need specialist training in order to run the assessments and to interpret findings. Although it is apparent that dyslexia screening is a specialist's job, it is important for teachers to engage in early identification in order to direct children with dyslexia type difficulties to formal assessment.

Teachers' involvement in identification of learners who show dyslexia type difficulties depends on their readiness to engage in the identification process. Teacher readiness in general has been measured in different ways in the existing research. For example, Van Gorp, Giupponi, Uebel, Dursun, and Swinehart, (2019) use teachers' technical skills, pedagogical skills, evaluation skills and ability to put these skills into practice as predictors of teacher readiness in measuring language teachers' ability to teach online. Naicker (2017) investigated teacher readiness to integrate information and communication technologies (ICT) into the teaching and learning process and measured it through three factors: ICT attitude, ICT training and ICT knowledge and school principal's role. Teacher competency and command in the subject matter (Kennedy, 1961); pre-service teachers' exam grades, teaching practice feedback and final exam evaluation (Strakova, 2015); and teaching strategies, self-efficacy and institutional support (Chou, Hung, Tsai, & Chang, 2020) have also been used as predictors of teacher readiness in various teaching contexts.

As can be seen from the above discussion, subject related knowledge has been used as an important predictor of teacher readiness in most of the studies. Previous research on teacher knowledge on dyslexia and learning difficulties has highlighted that it plays an important role in teachers' ability to accommodate dyslexic learners within the teaching-learning process. We considered knowledge as the specific "information [on a particular subject] that is acquired from authoritative external sources and that can therefore, presumably, be regarded as factual in nature" (Trevethan, 2017, p. 2).

It is generally agreed that teacher knowledge on dyslexia or any other learning difficulties is minimal in many countries. Author 2 (2019) found that English language teachers in Sri Lanka do not have sufficient knowledge on dyslexia, its features, identification methods or inclusive practices. Similar findings have been reported in other countries too. For example, Alawadh's (2016) study in the Arabic context and Chista and Mpfu's (2016) study in Zimbabwe. Alawadh notes that teachers who took part in their study did not know the benefits of early intervention. The findings of a large-scale survey conducted by Knight (2017) among 2,600 teachers in the UK point out that the participants lacked knowledge in neurological and cognitive aspects of dyslexia although they had basic understanding of it. In Zimbabwe, it seems lack of knowledge about dyslexia hinders teachers providing appropriate support to learners with dyslexia (Chista & Mpfu, 2016). Research on teacher knowledge related to teaching reading also provides evidence that teachers lack essential knowledge on reading difficulties. Washburn, Binks-Cantrell, Joshi, Martin-Chang, and Arrow's (2015) study which investigated preservice teachers' knowledge of basic language constructs across four teacher preparation programmes (Canada, England, New Zealand and the USA) revealed that across all countries the participating teachers demonstrated lack of knowledge on

constructs needed to teach early reading skills. Moats (1994) also found lack of teacher knowledge on language elements such as phonemes and morphemes and how these elements are presented in writing. Moats (2009) highlights the importance of teachers' preparedness in preventing and remediating reading and spelling disabilities; however, lack of teacher knowledge on concepts related to language and reading hinders the support that learners need. Due to the important role that teacher knowledge plays in accommodating learners with dyslexia in the teaching-learning process, teachers' basic knowledge on dyslexia was considered as one of the predictors of teacher readiness in identifying dyslexic learners in the current study.

Teachers' attitudes towards the subject, its content, teaching in general and learners, are vital in educational outcomes. For example, Al Harthy, Jamaluddin, & Abedalaziz (2013) found a direct link between teachers' attitudes towards teaching and their performance. Several studies on teachers' attitudes towards learners with SpLDs have also shown that teachers' attitudes play a significant role in the way that they implement inclusive practices in class (e.g., Hornstra, Denessen, Bakker, van den Bergh & Voeten, 2010). It has been widely acknowledged that teachers in many contexts generally have a negative attitude towards learners with learning difficulties. Hettiarachchi and Das (2014) revealed that teachers in Sri Lanka think learners with disabilities are 'misfits' in their schools. In India, teachers seem to think that learning difficulties are caused by lack of motivation among learners (Tiwari, Das, & Sharma, 2015). In another study in Sri Lanka, Author 2 (2019) also found that English language teachers generally had negative attitudes towards learners with learning difficulties, they were of the view that learners who struggle in classes are not interested in studying. As a consequence of such negative attitudes, teachers also seem to have lower expectations

of learners with learning difficulties (Forlin, Tait, Carroll, & Jobling, 1999) which would ultimately influence such learners' educational achievements. At the same time, a study by Taylor and Coyne (2014) in the UK shows that teachers who have some awareness of dyslexia have positive attitudes towards children with this SpLD. Due to the existing evidence that teachers' negative attitudes towards learning difficulties may hinder the support that dyslexic learners should be provided with, teachers' attitudes towards being involved in identifying dyslexia was considered as another important predictor of teacher readiness in the current study.

As early identification is important, it is vital for primary grade teachers to have some understanding of the process of identifying dyslexia. There have been a very few studies which investigated this aspect. Sonia's (2012) study with 100 primary teachers in Portugal reports that despite the amount of working experience, the majority of participants did not have awareness of detecting strategies. Nascimento, Rosal, and de Queiroga (2018) report similar findings in a study conducted in Brazil. Ogunsola (2018) investigated the relationship between teachers' qualifications and ability to identify dyslexia among 147 primary school teachers in Nigeria. The findings revealed that teacher awareness of how to identify dyslexia is low and the relationship between teacher qualifications/experience and their knowledge on dyslexia is weak. This suggests that teachers with experience or formal teaching qualifications do not automatically gain awareness of how to identify dyslexia.

As discussed so far, teachers should have some awareness on how to identify dyslexia in order to successfully do so. Awareness is defined as "people having generalized or diffuse knowledge about the existence of something" (Trevethan, 2017, p. 1) or knowing that something exists. It does not mean that people are able to use this

awareness to perform a task. Since previous research among teachers in Sri Lanka has clearly indicated that teachers had minimal knowledge on dyslexia, we assumed that they would not know about classroom strategies that they could use to identify learners with dyslexia. Therefore, we decided to investigate if the participating teachers at least had some awareness of the tools and the processes used in the local context to identify dyslexia. This includes those used in the formal identification mechanism carried out by either clinicians, speech and language therapists or special education teachers in the country. Although not widely available, such identification processes and some support services exist in the country at school level. We assumed that awareness of these processes and the support services is important for teachers so that they could at least direct learners who show learning difficulties to an appropriate identification process or a support service. Thus, teachers' self-reported awareness of local tools and processes used to identify dyslexia was included in this study as a predictor to assess teachers' readiness in identifying dyslexia.

To our knowledge, there has been no study that investigated primary grade teacher readiness in identifying learners with dyslexia. We believe that this is an important aspect to investigate if teachers are expected to monitor their students and direct those who have difficulties for formal screening. We used the following variables to measure teacher readiness to identify learners with dyslexia: (1) teachers' self-reported basic knowledge on dyslexia, (2) their self-reported awareness of local tools and processes used to identify dyslexia and (3) their self-reported attitudes towards engaging in the process of identifying dyslexia. We chose Sri Lanka as the research context as it has many similarities with many countries in the Global South in terms of the type of teacher education provision and the emphasis given to learning difficulties within the education

contexts. In this study, we attempted to answer the following research questions in view of investigating teacher readiness in identifying dyslexia:

RQ1: According to self-reports, to what extent do primary school teachers in Sri Lanka have basic knowledge on dyslexia?

RQ2: According to self-reports, to what extent are primary school teachers in Sri Lanka aware of tools and processes used to identify dyslexia in the local context?

RQ3: What are the self-reported attitudes of primary school teachers in Sri Lanka towards engaging in identifying dyslexia?

RQ4: According to self-reports, are primary school teachers in Sri Lanka ready to identify learners with dyslexia?

Methods

Context

Sri Lanka is a country in South Asia with a population of 22 million. Free education is provided for all, from primary grade one until the completion of bachelor's degrees at universities. Education is compulsory until the age of 16, mostly in the mother tongue. According to the School Census Report, there were 4.1 million school students in 2017 in 10,194 schools. Among them, 1.7 million were primary grade students (Ministry of Education, 2017). The mean number of students per primary school classroom is 32.14 ($SD = 9.823$).

Sri Lanka is comprised of nine administrative provinces. There are urban, suburban and rural areas, where facilities in schools, educational opportunities, teacher availability and motivation may vary. Hence, to get a better understanding of the teachers'

readiness in identifying dyslexic type difficulties in Sri Lanka, a national representative sample was chosen.

Sri Lanka has three main types of schools: state funded public schools, private and international schools, all of which were taken into consideration when selecting schools randomly. Class size varies depending on the type of schools. The mean number of students in a state funded public school is 32.86 ($SD = 9.485$), in a private school it is 29.42 ($SD = 9.215$) and in an international school it is 21.78 ($SD = 9.612$) respectively.

Sampling

A nationwide descriptive cross-sectional study was done in the primary sections of government and non-government schools in the nine provinces. The study population was all primary school teachers [$n = 85,000$], with teaching experience of more than six months (Ministry of Education, 2017). All these teachers are involved in teaching the main primary school subjects such as mathematics and at least one language (first language). Some teach more than one language (e.g., English and/or Tamil as an additional language). There is limited published literature in the local context related to the subject area to calculate the sample size needed. Hence, study findings from research conducted in the neighbouring country - India by Shetty and Rai (2014) was considered in calculating the sample size. According to their findings, only 7.7% of elementary teachers in India had adequate knowledge of dyslexia. Considering the above proportion in India, to reduce biases and enhance generalizability, the fraction of adequate knowledge among the study population was considered as 50% to encounter the maximum variance. The Z value at 99% significance level is 2.576; prevalence (p) is 50% and confidence limit (D) is 5%. The required sample size (n) was calculated using the following equation.

$$N = \frac{Z^2 * p(1-p)}{D^2}$$

$$D^2$$

(Lwanga & Lemeshow, 1995)

$$N = 2.576^2 * 0.5 (1-0.5) / 0.05^2 = 664$$

Accordingly, the minimum required sample size was 664. Multistage cluster sampling was applied to select the sample for the survey. All the schools with a primary section were clustered in each province. A total sample of 705 participants was achieved by purposive recruitment of participants from randomly selected schools in each province. Participants were recruited according to proportion of the teachers from each province until the provincial quota was achieved (please see Table1). Around 8-12 schools from each province were randomly selected for data collection.

INSERT TABLE 1 HERE

Participants

From seven hundred and five ($n = 705$) participants took part in the survey. The mean age of the sample was 41.5 ($SD = \pm 9.535$) years and the majority (92.6%, $n = 654$) were females. The mean teaching experience was 15.19 ($SD = \pm 9.955$) years. Four hundred and eighty-seven (69.1%) participants used Sinhala, 138 (19.6%) used Tamil and 80 (11.3%) used English as the medium of teaching. According to their academic and professional qualifications, 16.1% ($n = 114$) participants had General Certificate of Education (GCE) Advanced Level qualification (university entrance examination) but no other training and 35.5% ($n = 250$) teachers had a bachelor's degree or above. Almost half (47.7%, $n = 337$) of the participants had not received any training in special needs

education (SNE) and one fifth (20.1%, $n = 142$) had taken a certificate or a diploma course in SNE.

Instruments

Data were collected by a self-administered questionnaire (Appendix A) which was developed after a thorough literature survey. Open-source study instruments: the ‘Dyslexia Belief Index (DBI)’ (Wadlington & Wadlington, 2005) and ‘A scale of knowledge and beliefs about developmental dyslexia’ (Soriano-Ferrer & Echegaray-Bengoa, 2014) were chosen as these questionnaires were frequently used by other researchers (e.g., Dodur & Altındağ-Kumaş, 2020; Echegaray-Bengoa, Soriano-Ferrer, & Joshi, 2017; Washburn, Binks-Cantrell, & Joshi, 2013; Washburn, Joshi, & Binks-Cantrell, 2011) and were developed to measure knowledge and beliefs related to dyslexia.

Several discussions with subject experts were held when designing the questionnaire. Based on the initial qualitative information gathered about teacher knowledge on dyslexia among primary teachers in Sri Lanka, several questions in the above two tools were excluded from our survey because they were context irrelevant (e.g., ‘Most special education teachers receive intensive training to work with students with dyslexia’). Some questions were modified and adjusted to suit the Sri Lankan context (e.g., ‘Schools usually diagnose dyslexia through the administration of a nationally recognized standardized test’ was replaced by several questions, as Sri Lanka does not have such a national standard test yet). Some context specific questions were added (e.g., ‘The dyslexia identification process can be completed usually within a one-month period, if resources are available’, was added as it was seen as a common belief among teachers in the country).

Both face and content validations were performed with the help of 15 subject experts (10 special needs teachers and five clinicians) from both education and health disciplines. The questions were challenged for representativeness, clarity and relevance to the study context. Some questions were readjusted and rephrased after the validation. As Sinhala, Tamil and English languages are used as the medium of teaching in different schools in Sri Lanka, the questionnaire was translated from English to Sinhala and Tamil languages and retranslated to English by professionals (two independent language experts) to verify the accuracy of the translations.

Then we piloted the final questionnaire with grade six school teachers, prior to the island wide survey. These teachers were recruited for the pilot study to minimize the effect to main study population (teachers of grade one to five). Therefore, the size of the primary population of interest did not alter when conducting the proper study. Piloting was beneficial to check the feasibility and practicality of the data collection process as well. It predicted that the questionnaire return rate would be 93% and the specific knowledge with regard to dyslexia may be minimal. Therefore, we further strengthened questionnaire recollection mechanisms and also revised the questions accordingly.

The questionnaire had four domains: (1) demographic data, (2) teachers' self-reported basic knowledge on dyslexia, (3) their self-reported awareness of local tools and processes used to identify dyslexia and (4) their self-reported attitudes towards engaging in identifying dyslexia (Appendix A). The variables were: type of school, language of teaching, class size, highest educational qualification achieved, level of training in SNE, years of teaching experience, self-reported basic knowledge on dyslexia, self-reported awareness of local tools and processes used to identify dyslexia, self-reported attitudes

towards actively engaging in identifying dyslexia and readiness to identify learners with dyslexia.

The three main domains of the questionnaire except demographic data contained ten statements/questions each, with three answers to choose one from: (1) Yes (2) No and (3) Do not know. Each correct answer was given one mark and the section mark was calculated by a total of ten and presented out of 100 (as percentages). To calculate the 'readiness' of teachers to identify children with dyslexia, the marks from all three domains were added together (readiness = knowledge + awareness + attitudes) and presented as percentages. All the marks gained in the three sections in the questionnaire and in combination (knowledge, awareness, attitude and readiness) were categorized as shown in Table 2. While analysing the data, we noticed that the positive attitude marks of many participants were compensating for the negative knowledge and awareness marks when calculating the 'total readiness score' which represented participants' readiness to identify learners with dyslexia. Therefore, to minimize this masking effect which could have led to biased interpretation, we developed another variable named 'overall satisfaction'. Participants who received >50 marks for all three main domains of knowledge, awareness and attitudes were considered as having an 'overall satisfactory score'.

INSERT TABLE 2 HERE

Data analysis

Data were entered into an electronic format (spreadsheet) and imported into the Statistical Software for Social Sciences - SPSS (version 21) before analysis. Descriptive

statistics were expressed as proportions and percentages. The inferential statistics on bivariate associations were analysed with chi square tests and simple logistic regression for each subdomain (knowledge, awareness, attitude, readiness and overall satisfaction). Then, multiple logistic regression was applied for each subdomain for further identification of collective influential variables from all the significant variables identified from the bivariate analysis. The level of significance (p) was considered as 0.05.

Results

RQ1: According to self-reports, to what extent do primary school teachers in Sri Lanka have basic knowledge on dyslexia?

Among all the teachers, only 109 (15.5%) thought dyslexia was a neurological condition, 166 (23.5%) thought it was a disease, 180 (25.5%) thought it was a movement disorder, 35 (5%) thought it was a visual defect and 215 (30.5%) were not sure what it was. The majority of the sample (62%, $n = 437$) thought dyslexia was ‘curable’ and ‘more practice only’ could improve any reading difficulty (70.2%, $n = 495$). Half of the sample (54%, $n = 381$) thought that children with dyslexia had low intelligence and 39% ($n = 275$) thought if a child’s reading ability was one grade level below his/her current age grade, that child would be dyslexic. When questioned about difficulties dyslexic learners face, the majority agreed that they have difficulty with spelling (72.8%, $n = 513$), learning letter patterns (68.2%, $n = 481$) and learning letter sounds (59.1%, $n = 417$). The majority of the participants (70.1%, $n = 495$) thought that most children with dyslexia face a common set of problems in their lives rather than having individual difficulties and strengths.

The mean score for the first section of the questionnaire, on *basic knowledge on dyslexia* was 31.90 ($SD = 18.996$), indicating lack of sufficient knowledge. Most of the

teachers (521, 73.8%) scored less than 50 out of 100 and only 184 participants (26.1%) scored higher than 50 or above in the knowledge category. Only eight participants (1.1%) had a highly sufficient level in knowledge (please see Table 3 for reference levels and scores).

INSERT TABLE 3 HERE

According to simple logistic regression, the variables that showed a significant association with knowledge are illustrated in Table 4. Teachers' knowledge was significantly positively associated with age (those who were younger had more knowledge), continued education after leaving school, in-service training on SNE, type of school (those who were in international and private schools had more knowledge) and language of teaching (those who used English had better knowledge than those who taught in Tamil and Sinhala).

INSERT TABLE 4 HERE

Knowledge was also significantly associated with both awareness ($p < 0.001$, Wald 14.598, df 1) and attitudes ($p < 0.001$, Wald 42.424, df 1) of the teachers. According to multiple logistic regression with the associated variables, only type of school was found to be statistically significant ($p < 0.001$, $df=4$) with knowledge of the teachers (please see Table 8). For all the results of the multiple logistic regression with all the subgroups, please see Appendix D.

RQ2: According to self-reports, to what extent are primary school teachers in Sri Lanka aware of tools and processes used to identify dyslexia in the local context?

Among the teachers that participated in the study, half (52.3%, $n = 369$) said that they evaluated students with possible SpLDs in their class. One hundred and four participants (14.8%) had referred these children to a doctor, a psychologist or to a speech and language therapist. One hundred and two (14.4%) participants said they did not know what to do with a student with possible SpLDs, hence they had not specifically done anything for further evaluation.

When questioned about the process of identification, half of the sample (51.6%, $n = 364$) declared that the first thing they would do would be to talk with the parents to gather more information to understand the situation if they came across a child with a dyslexia type difficulty. Nearly one third of the participants (31.6%, $n = 223$) were more concerned about checking children's intelligence; 44 (6.2%) wanted to compare the child with the other children in the class as the first step and 74 (10.5%) were unsure of what they would do and they might seek advice from someone else for the assessment.

The majority of the participants agreed that children showing a considerable learning/reading difficulty should be identified early (94.8%, $n = 668$), this should involve a team of experts (83.9%, $n = 592$) and parents' involvement is crucial for decision making (85.3%, $n = 602$). More than half the participants (57.8%, $n = 408$) were not aware of any assessment/evaluation process, tools or practices in Sri Lanka, and almost three quarters of participants (74.5%, $n = 526$) were not aware of any institutes or professionals involved in dyslexia screening. One third (35.7%, $n = 252$) believed that the identification-evaluation-diagnosis process of dyslexia could be completed within one month in all instances, and two thirds (63.9%, $n = 451$) believed that special educational services could not be provided until a final diagnosis of dyslexia.

The mean score for the *awareness of the tools and processes used to identify dyslexia in the local context* among the participants was 43.361 ($SD = 13.030$), which indicates lack of sufficient awareness. Three hundred and twenty (45.4%) of the sample had a ‘sufficient’ level of awareness and only 4 (0.6%) had a ‘highly sufficient’ level (Please see Table 3).

According to simple logistic regression, teachers’ awareness of the tools and processes used to identify dyslexia in the local context was significantly positively associated with continued education after GCE Advanced level, in-service training on SNE, time of appointments as teachers (those who had recent appointments had more awareness), type of schools (those who were in international or private schools had more awareness), class size (fewer students, more awareness) and language of teaching (Tamil and English medium teachers had more awareness) (Please see table 5).

Awareness was not significantly associated with attitudes ($p > 0.05$, Spearman correlation coefficient 0.64). With the multiple logistic analysis of the associated variables, those which were found to be significant were: type of school ($p = 0.009$, $df = 4$), province ($p < 0.001$, $df = 8$), years of teaching experience ($p < 0.001$, $df = 1$) and class size ($p = 0.004$, $df = 1$) (Please see Table 8). For the results of the multiple logistic regression model with all the subgroups, please see Appendix D.

INSERT TABLE 5 HERE

RQ3: What are the self-reported attitudes of primary school teachers in Sri Lanka towards engaging in identifying dyslexia?

Most of the participants (71%, $n = 501$) believed that doing more homework would help children to overcome dyslexia. Half of the sample (49.2%, $n = 347$) thought

that overcrowded classrooms were a major barrier to carrying out the identification and evaluation process in the class. The majority of the participants (69.2%, $n = 492$) believed finishing the curriculum scheduled for the year was more important, as they focus on the majority of the students in the class. Half of the sample (55.4%, $n = 391$) did not think time was a limiting factor to identifying dyslexia in the classroom along with the routine work, while nearly half (41.9%, $n = 296$) thought it was.

The majority of the participants (71.2%, $n = 644$) felt that they were responsible for early and proper identification of dyslexia among their students. Most (90.9%, $n = 642$) were willing to self-study about the topic in future, 81% ($n = 572$) were willing to attend workshops and 92.2% ($n = 651$) would consider making an extra effort to identify children with learning difficulties in their class, if resources and support were available.

The mean score of the *attitude towards engaging in identifying dyslexia* among the participants was 67.1777 ($SD = 17.125$), which was in the sufficient category, so most (629, 89.1%) scored a ‘sufficient’ mark and a smaller number (76, 10.8%) scored an ‘insufficient’ score.

According to simple logistic regression, teachers’ attitudes were significantly positively associated with the type of school (international schools, then private schools) and language (Sinhala compared to Tamil and English) (Please see Table 6 for the relevant associations). From the results of multiple logistic regression, province ($p=0.019$, $df=8$), type of school ($p=0.025$, $df=4$) and language ($p<0.001$, $df=2$) were found to be statistically significant with the attitudes of the teachers (Please see Table 8). For further results of the multiple logistic regression with all the subgroups, please see Appendix D.

INSERT TABLE 6 HERE

RQ4: According to self-reports, are primary school teachers in Sri Lanka ready to identify learners with dyslexia?

Readiness was expressed as the cumulative score, calculated by adding the scores of the three basic score domains (knowledge + awareness + attitudes). The mean score for *readiness of teachers to identify learners with dyslexia* was 47.479 ($SD = 10.979$), which is below the designated level of 50 as ‘sufficient’. Slightly less than half (357, 44.3%) of the participants had a sufficient score for readiness.

A sufficient mark in all three domains were viewed as ‘overall satisfactory’. Only 40 (5.7%) teachers did not get a sufficient score in all three domains. Two hundred and ninety-eight (42.3%) got a sufficient score in at least in one domain and 266 (37.7%) got sufficient scores in two domains. Only 101 (14.3%) scored a sufficient mark (more than 50) in all three domains: knowledge, awareness and attitudes.

According to simple logistic regression, readiness was significantly associated with the language of teaching (English was more positively associated than Sinhala and Tamil), type of school (international schools, then private schools) and class size (smaller class was positively associated) (Please see Table 7 for more details). Knowledge ($p < 0.05$, $SCC 0.611$), awareness ($p < 0.05$, $SCC 0.444$) and attitudes ($p < 0.05$, $SCC 0.439$) were significantly associated with the readiness of teachers to identify dyslexia.

According to simple logistic regression, *overall satisfactory* score was significantly associated with language of teaching (English is more associated than Sinhala and Tamil), type of school (international schools, private schools then government schools), class size (smaller class was more positively associated) and SNE training (in-service training had a better influence on teachers’ overall scores) (Please see Table 7).

INSERT TABLE 7 HERE

According to the multiple logistic regression model, readiness was significantly associated with the type of school only ($p=0.002$, $df=4$, $wald=16.866$). The *all-satisfactory* score was significantly associated with the type of school ($p=0.004$, $df=4$, $wald = 15.331$) and the province ($p<0.001$, $df=8$, $wald=29.967$) (Please see Table 8).

INSERT TABLE 8 HERE

Discussion

The findings relating to the first research question on primary teachers' self-reported basic knowledge on dyslexia show that only one third of the sample had a satisfactory level. This is similar to the findings in studies conducted in different parts of the world (e.g., Alawadh, 2016; Chista & Mpofo, 2016; Knight, 2017; Moats, 1994; Washburn, Binks-Cantrell, Joshi, Martin-Chang, & Arrow, 2015) including Author 2 (2019)'s study which analysed Sri Lankan English language teachers' knowledge on dyslexia. The second research question explored teachers' self-reported awareness of local tools and processes used to identify dyslexia. The study highlighted that more than half the participants had insufficient awareness of the tools and processes used to identify dyslexia in their context. Sonia (2012) and Nascimento, Rosal, and de Queiroga (2018) discuss a similar issue in Greece and Brazil. Although it is very important for teachers to have awareness of the identification practices for early identification and to lead learners to appropriate support services, the findings in the current study along with these previous studies highlight that teachers in many contexts in the world may not be aware of the tools and processes to identify dyslexia unless they have been explicitly informed of them. Correlation analysis in the current study reveals that teachers' basic knowledge

on dyslexia and their awareness of local tools and processes used to identify dyslexia are significantly correlated. This indicates that if teachers have basic knowledge on dyslexia, they may also be aware of the identification mechanisms available in their local contexts and, as a result, they may direct learners who show dyslexia type difficulties to appropriate support services. This finding reveals the importance of providing opportunities for teachers to learn about learning difficulties such as dyslexia.

As previously discussed, teachers' basic knowledge of dyslexia is also related to their attitudes towards learners with dyslexia or other learning difficulties, indicating more knowledge leads to positive attitudes (e.g., Alfaro, Kupczynski & Mundy, 2015; Taylor & Coyne, 2014). Two previous studies (Author 2; Hettiarachchi & Das, 2014) revealed that if teachers in Sri Lanka lack knowledge on learning difficulties, they generally have negative attitudes towards children with such difficulties. The same has also been identified in other contexts such as in India (Tiwari, Das, & Sharma, 2014). In the third research question of this study, we investigated the self-reported attitudes of primary school teachers in Sri Lanka towards engaging in the process of identifying dyslexia. Nearly 90% showed positive attitudes towards it. This seems different to previous findings in Sri Lanka on teachers' attitudes towards dyslexia. The current study specifically investigated teachers' attitudes towards engaging in the process of identifying dyslexia rather than their overall attitudes towards children with dyslexia. As a result, their responses in the current study do not reflect their attitudes towards children with dyslexia in general, but perhaps show their willingness to be actively involved in identifying dyslexia.

Previous studies have indicated that teachers' qualifications and/or experience do not really correlate with their understanding of learning difficulties (e.g., Ogunisola,

2018). In other words, teachers' experience or their professional qualifications do not guarantee that they have knowledge about learning difficulties. As in previous studies, this study does not show a relationship between teachers' basic knowledge on dyslexia and their teaching experience. However, the study indicates that teachers' basic knowledge on dyslexia and their awareness of local tools and processes used to identify it have a significant relationship with teachers' younger age, continued education after leaving school, in-service training on SNE, type of school and the language medium of teaching (English).

It is important to discuss these findings further to understand how far primary grade teachers in Sri Lanka can be involved in identifying dyslexia. According to Jones (2013), young teachers are more likely to successfully use technology in class. Teachers' age and/or English language proficiency in the current study may be associated with their ability to use technology to access information on dyslexia/SpLDs/reading difficulties through the Internet and/or other materials available in English. It is also important to note that any materials on learning difficulties produced in local languages are rare to find. Teachers' basic knowledge on dyslexia, their awareness of local tools and processes used to identify dyslexia and their attitudes towards engaging in such processes are also significantly related to the type of schools that teachers work in. These findings highlight that teachers in private or international schools have more knowledge on dyslexia, awareness of the tools and processes available to identify dyslexia and positive attitudes towards engaging in identifying dyslexia compared to those in the mainstream education system. The medium of education in most private and international schools in Sri Lanka is English. Therefore, teachers who work in those schools have higher English language proficiency. As discussed previously, this may have helped these teachers to gain more

knowledge about dyslexia, resulting in their awareness of local identification tools and practices as well as positive attitudes towards engaging in identifying dyslexia.

Under the last research question, the study analysed teacher readiness in identifying children with dyslexia. Readiness is also positively correlated with greater knowledge on dyslexia, awareness of the tools and processes used to identify dyslexia, positive attitudes towards engaging in identifying dyslexia, type of school (private and international school teachers showed more readiness) and English language proficiency. In other words, when teachers are more knowledgeable about dyslexia, they seem to hold positive attitudes towards engaging in the process of identifying dyslexia and are aware of the relevant tools and processes. These make them ready to get involved in identifying children with dyslexia. Several studies in other teaching contexts such as using technology in teaching have shown similar results where teacher knowledge is positively correlated with their readiness to play the expected role (e.g., Al-Awidi & Aldhafeeri, 2017; Suleiman, Hamzah, Rahim, 2017).

The study also revealed that teachers with SNE training are more knowledgeable about dyslexia and ready to get involved in the identification process. Taking the previously discussed findings on how to access knowledge on dyslexia, it is possible to assume that specific training on dyslexia/learning difficulties is needed in order to help teachers get involved in the process of identifying dyslexia. As Alawadh (2016) and Chitsa and Mpfu (2016) also discuss, specific training on dyslexia is important for teachers to get actively involved in helping learners with dyslexia in the teaching-learning process.

Conclusion

The primary aim of this study was to understand how far primary grade teachers in Sri Lanka are ready to identify learners with dyslexia and if their readiness has a relationship with their self-reported basic knowledge on dyslexia, self-reported awareness of local tools and processes used to identify dyslexia and their self-reported attitudes towards engaging in such processes. The findings highlighted that the majority of the participants lack knowledge on dyslexia and awareness of available identification tools and processes. However, they seem to have an overall positive attitude towards getting involved in identifying dyslexia, but their current overall readiness to do it is low.

The study also revealed that those who have more knowledge about dyslexia and awareness of local tools and processes used to identify dyslexia are ready to get involved in identifying dyslexia. Such participants are significantly higher in private and international schools than in mainstream schools. As the number of private and international schools in the country is very limited, the number of primary grade teachers who are ready to get involved in the process of identifying dyslexia, according to this study, is very low. This indicates that pre- and in-service teacher training provision in mainstream schools does not sufficiently address topics related to learning difficulties and more training on SpLDs such as dyslexia should be provided. In addition, those who have a higher English language proficiency showed more readiness than others; this may indicate their ability to access information on dyslexia more easily. Therefore, training provision and making more resources available in local languages are also vital.

As one of the limitations, the study could have incorporated a qualitative approach as well to evaluate more on practical problems teachers face at the classroom level. In addition, when grading the scores of the questionnaire, the researchers had to develop and identify reference ranges for marks suited for the Sri Lankan situation

compared to following an established and validated tool with score referencing system. This we see as another limitation of the study.

This study opens up several future research possibilities. It would be worth investigating how far the pre- and in-service teacher training curriculum covers the topic of SpLDs, how far teacher training helps teachers to identify children with dyslexia, and the problems that teachers face at the classroom level in identifying learners with dyslexia in order to gain a more in-depth understanding of the identification of dyslexia at school level in Sri Lanka.

References

Author 2 (2019)

Alawadh, A. S. (2016). *Teachers perceptions of the challenges related to provision of services for learners with specific learning difficulties (dyslexia) in Kuwait government primary schools*. (Unpublished doctoral dissertation). University of York, UK.

Al-Awidi, M. H. & Aldhafeeri, M. F. (2017). Teachers' readiness to implement digital curriculum in Kuwaiti schools. *Journal of Information Technology Education: Research, 16*, 105-126. doi: 10.28945/3685

Alfaro, V., Kupczynski, L., & Mundy, M. (2015). The relationship between teacher knowledge and skills and teacher attitude towards students with disabilities among elementary, middle and high school teachers in rural Texas schools. *Journal of Instructional Pedagogies, 16*.

- Al Harthy, S., Jamaluddin, S., & Abedalaziz, N. (2013). Teachers' attitudes and performance: An analysis of effects due to teaching experience. *International Interdisciplinary Journal of Education*, 2 (9), 889-894. doi: 10.12816/0002957
- Carroll, J. M., Bradley, L., Crawford, H., Hannant, P., Johnson, H., & Thompson, A. (2017). *SEN support: A rapid evidence assessment*. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/628630/DfE_SEN_Support_REA_Report.pdf
- Catts, H. W., Nielsen, D. C., Bridges, M. S., Liu, Y. S., & Bontempo, D. E. (2015). Early identification of reading disabilities within an RTI framework. *Journal of Learning Disabilities*, 48, 281–297. Available at <https://doi.org/10.1177/0022219413498115>
- Chista, B. & Mpofu, J. (2016). Challenges faced by grade seven teachers when teaching pupils with dyslexia in the mainstream lessons in Mzilikazi District Bulawayo Metropolitan Province. *Journal of Research & Method in Education*, 6 (5), 64-75.
- Chou, C., Hung, M., Tsai, C., & Chang, Y. (2020). Developing and validating a scale for measuring teachers' readiness for flipped classrooms in junior high schools. *British Journal of Educational Technology*, 51 (4), 1420-1435. doi: 10.1111/bjet.12895
- Colenbrander, D., Ricketts, J. & Breadmore, H. L. (2018). Early identification of dyslexia: Understanding the issues. *Language, Speech, and Hearing Services in Schools*, 49, 817–828.
- Dewalt, D. A., Berkman, N. D., Sheridan, S., Lohr, K. N., & Pignone, M. P. (2004). Literacy and health outcomes: A systematic review of the literature. *Journal of General Internal Medicine*, 19, 1228–1239. Available at <https://doi.org/10.1111/j.1525-1497.2004.40153.x>

- Dodur, H. M. S., & Altındağ-Kumaş, Ö. (2020). Knowledge and beliefs of classroom teachers about dyslexia: the case of teachers in Turkey. *European Journal of Special Needs Education*, 1-17. doi: 10.1080/08856257.2020.1779980
- Echegaray-Bengoa, J., Soriano-Ferrer, M., & Joshi, R. (2017). Knowledge and beliefs about developmental dyslexia: A comparison between pre-service and in-service Peruvian teachers. *Journal of Hispanic Higher Education*, 16 (4), 375-389. doi: 10.1177/1538192717697591
- Frederickson, N., Frith, U., & Reason, R. (1997). *Phonological abilities test*. London: NFER Nelson
- Forlin, C., Tait, K., Carroll, A., & Jobling, A. (1999). Teacher education for diversity. *Queensland Journal of Educational Research*, 5, 207-226.
- Hettiarachchi, S., & Das, A. (2014). Perceptions of 'inclusion' and perceived preparedness among school teachers in Sri Lanka. *Teaching and Teacher Education*, 43, 143-153.
- Hornstra, L., Denessen, E., Bakker, J., Van den Bergh, L., & Voeten, M. (2010). Teacher attitudes toward dyslexia: Effects on teacher expectations and the academic achievement of students with dyslexia. *Journal of Learning Disabilities*, 43(6), 515-529.
- International Dyslexia Association (2020). Testing and Evaluation Factsheet. Available at <https://dyslexiaida.org/testing-and-evaluation/> [Accessed on 09/05/2020].
- Jones, N. T. (2013). *Veteran teachers' perceptions of the factors influencing the incorporation of advanced technology into their classrooms* (Doctoral dissertation). La Sierra University. Available at <https://www.learntechlib.org/p/120238/>

- Kennedy, R. H. (1961). Teacher Readiness for Curriculum Improvement. *The Bulletin of the National Association of Secondary School Principals*, 45(266), 70–74. Available at <https://doi.org/10.1177/019263656104526615>
- Knight, C. (2017). What is dyslexia: An exploration of the relationship between teachers' understandings of dyslexia and their training experiences. *Dyslexia*, 24 (3): 207–219. doi: 10.1002/dys.1593
- Kormos, J. (2017). *The second language learning processes of students with Specific Learning Difficulties*. New York, NY: Routledge.
- Kormos, J., & Smith, A. M. (2012). *Teaching languages to students with specific learning differences*. Bristol, England: Multilingual Matters.
- Lawrence, D. (2009). *Understanding dyslexia [electronic Resource: A Guide for Teachers and Parents]*. Maidenhead: Open UP.
- Lwanga, S., & Lemeshow, S. (1995). *Sample size determination in health studies*. Geneva: World Health Organization.
- Ministry of Education (2017). *School Census Report*. Available at http://www.statistics.gov.lk/education/School%20Census%20Report_2017.pdf
- Moats, L. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia*, 44 (1), 81-102. doi: 10.1007/bf02648156
- Moats, L. (2009). Still wanted. *Journal of Learning Disabilities*, 42 (5), 387-391. doi: 10.1177/0022219409338735
- Muter, V., Hulme, C., & Snowling, M. (1997). *Phonological Abilities Test*. London: Psychological Corporation

- Naicker, T. (2017). *Exploring Teacher Readiness to Integrate Information and Communication Technologies into the Teaching and Learning Process: A Case Study of Two Gauteng Schools* (Masters). University of Witwatersrand.
- Naidoo, S. (1972). *Specific dyslexia: the research report of the ICAA Word Blind Centre for dyslexic children*. New York, NY: J. Wiley.
- Nascimento, I. S., Rosal, A. G. C. & de Queiroga, B. A. M. (2018). Elementary school teachers' knowledge on dyslexia. *Revista CEFAC*, 20 (1), 87-93.
- OECD. (2013). *OECD skills outlook 2013: First results from the survey of adult skills*. Available at http://www.oecd-ilibrary.org/education/oecd-skills-outlook-2013_9789264204256-en
- Ogunsola, B. A. (2018). Teacher's qualification and dyslexia identification in primary schools in Oyo State, Nigeria. *Africa Education Review*, 15 (4), 36-66. Available at <https://doi.org/10.1080/18146627.2017.1302308>
- Ricketts, J., Sperring, R., & Nation, K. (2014). Educational attainment in poor comprehenders. *Frontiers in Psychology*, 5, 445. Available at <https://doi.org/10.3389/fpsyg.2014.00445>
- Rose, J. (2009). Identifying and teaching children and young people with dyslexia and literacy difficulties. Available at <http://www.thedyslexia-spldtrust.org.uk/media/downloads/inline/the-rose-report.1294933674.pdf>
- Shetty, A. & Rai, S. (2014). Awareness and knowledge of dyslexia among elementary school teachers in India. *Journal of Medical Science and Clinical Research*. 2. 1135-1143.
- Sonia, L. (2012). Dyslexia through the eyes of primary school teachers. *Procedia - Social and Behavioural Sciences*, 69, 41-46.

- Soriano-Ferrer, M., & Echegaray-Bengoa, J. A. (2014). A scale of knowledge & beliefs about developmental dyslexia: scale development and validation. *Procedia-Social & Behavioural Sciences*, *132*, 203-208.
- Straková, Z. (2015). The perception of readiness for teaching profession: a case of pre-service trainees. *Journal of Language and Cultural Education*, *3* (1), 32-42. doi: 10.1515/jolace-2015-0003
- Sulaiman, T., Hamzah, S. N., & Rahim, S. S. A. (2017). The relationship between readiness and teachers' competency towards creativity in teaching among trainee teachers. *International Journal of social science and humanity*, *7* (8).
- Taylor, L., & Coyne, E. (2014). Teachers' attitudes and knowledge about dyslexia: Are they affecting children diagnosed with dyslexia? *Dyslexia Review*, *25*, 20–23.
- Tiwari, A., Das, A., & Sharma, M. (2015). Inclusive education a "rhetoric" or "reality"? Teachers' perspectives and beliefs. *Teaching and Teacher Education*, *52*, 128-136.
- Trevethan, R. (2017). Deconstructing and assessing knowledge and awareness in public health research. *Frontiers in Public Health*, *5*. doi: 10.3389/fpubh.2017.00194
- Van Gorp, K., Giupponi, L., Heidrich Uebel, E., Dursun, A., & Swinehart, N. (2019). Defining teachers' readiness for online language teaching: toward a unified framework. In F. Meunier, J. Van de Vyver, L. Bradley & S. Thouëсны (Eds), *CALL and complexity – short papers from EUROCALL (2019)*. 373-378. Research-publishing.net.<https://doi.org/10.14705/rpnet.2019.38.1039>
- Wadlington, E. M., & Wadlington, P. L. (2005). Dyslexia Belief Index. What educators really believe about dyslexia. *Reading Improvement*, *42* (1), 16–33.
- Wanzek, J., & Vaughn, S. (2007). Research-based implications from extensive early reading interventions. *School Psychology Review*, *36*, 541–561.

- Washburn, E., Binks-Cantrell, E., & Joshi, R. (2013). What do preservice teachers from the USA and the UK know about dyslexia. *Dyslexia*, *20* (1), 1-18. doi: 10.1002/dys.1459
- Washburn, E., Binks-Cantrell, E., Joshi, R., Martin-Chang, S., & Arrow, A. (2015). Preservice teacher knowledge of basic language constructs in Canada, England, New Zealand, and the USA. *Annals of Dyslexia*, *66* (1), 7-26. doi: 10.1007/s11881-015-0115-x
- Washburn, E., Joshi, R., & Binks-Cantrell, E. (2011). Teacher knowledge of basic language concepts and dyslexia. *Dyslexia*, *17* (2), 165-183. doi: 10.1002/dys.426