

ORIGINAL ARTICLE

Occupational Performance of the Primary Schoolchildren with Special Education Needs in Malaysia: Exploring the Needs of School-based Therapy Service

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ABSTRACT

Children's occupational performance are activities of daily living, play/ leisure, social participation, education, and work. In developed countries, school-based therapy services are being provided for schoolchildren with special needs. The importance of these services in Malaysia is timely to be explored. This exploratory cross-sectional study identified occupational performance levels of primary schoolchildren with special needs in integrated special education programmes in Malaysia; children with intellectual disability, autism, attention deficit hyperactive disorder, Down syndrome, speech impairment, visual impairment, hearing impairment, and specific learning disorder. Researchers conducted Motor-Free Visual Perceptual Test Third Edition (MVPT-3), Beery-Buktenica Developmental Test of Visual-Motor Integration Fifth Edition (Beery-VMI), Test of Gross Motor Development – 2 (TGMD-2), Test of Hand Writing Skills-Revised (THS-R), and School Function Assessment (SFA) for 121 students. Results showed that 69.5% of the students scored very low to low average in MVPT-3 (median standard score = 70.0, Std. IQR = 37); 69.4% were very low to below average in Beery-VMI (mean standard score = 78.8, Std. deviation = 20.5); 73% were below age level raw score in TGMD-2; 72.8% were below average in THS-R (median standard score = 74.0, Std. IQR = 27.0); and 81% were below the criterion cut-off in school function. The children with below-normal MVPT, VMI, TGMD2, and THS scores, compared to the children with normal scores for these tests had significantly lower scores ($p < 0.001$). All the students had impairment in occupation performance at least in one area. This study recommends school-based occupational therapy and other rehabilitation services in the school system in Malaysia.

INTRODUCTION

Occupational performance means the action of doing and achieving an activity or occupation and it is the outcome from the dynamic transaction among the individual, the context, and the activity (Roley et al., 2008).

Swinth et al. (2003) stated that children's occupational performance includes activities of daily living, play/ leisure, social participation, education, and work activities. Their performance depends on visual perception, visual integration, and gross motor and fine motor skills (Whalen, 2002). It could be impaired by physical, developmental, sensory, attention, and or learning challenge (Whalen, 2003). It is also influenced by factors such as classroom culture, implicit and explicit rules established by the teacher or education system, specific requirements of the task which is assigned by the teacher, the location of tools and materials, and types of the tools and materials they use (Munkholm, 2010).

This project defines children with special needs as those children who need special education in integrated special education programs in Malaysia. They are children with intellectual disabilities, autism spectrum disorder (ASD), attention deficit hyperactive disorder (ADHD), Down syndrome, specific speech and language impairments, speech delay, visual impairment, hearing impairment, and specific learning disorders.

Schools for students with special needs provide school-based therapy services in the United States of America, the United Kingdom, and Canada (Whalen, 2003).

Occupational Therapy (OT) emphasizes assisting the children to participate in the occupational areas particularly in activities of daily living, education, work, play/ leisure, and social participation (Swinth et al., 2003). OT intervention aims to support their school performance in the areas of

reading, writing, mathematics, manipulation of tools, performance in physical education, independence with self-care tasks, and social integration (Whalen, 2002).

Children with special needs in Malaysia receive OT and other rehabilitation services in the health care system and some of the welfare facilities. However, when they reach school age, they have to spend most of their time in school, and their opportunity to obtain rehabilitation services become limited. The children may not be able to go regularly for receiving therapy or they discontinue going to the health centre for the therapy appointment. In a study by Teoh et al. (2008), 62.6% of the teachers responded that they need the cooperation of health professions including psychologists, paediatricians, speech therapists, and occupational therapists regularly to deal with learning disorders and 27.1% responded that their needs are sometimes.

In Malaysia, special education service is provided to school-aged children with visual impairment, hearing impairment, children with a learning disability (intellectual disability, autism, attention deficit hyperactive disorder, Down syndrome, speech impairment, visual impairment, hearing impairment, and specific learning disorder) and the children who need remedial education (Shah, 2005).

Special education was introduced in Malaysia in 1954. It has been developing by the provision of many special education programmes, training the special education teachers, providing good physical facilities by the federal government, and collaborating with social resources such as non-government organizations, corporate sectors, and international organizations (Nadhir et al., 2016). However, the provision of school based-therapy (e.g. occupational therapy and others), which serve as a related service in the school system should be the special attention of the Malaysia Ministry of Education.

There is no school-based OT service in Malaysia. Lack of emphasis to develop school-based OT in Malaysia may be due to limited information on OT roles in the school system especially in special education programs and the absence of published papers in Malaysia stating the needs for school-based therapy.

Swinth et al. (2003) stated that OT focus on helping students to engage in meaningful and purposeful daily school occupations. OT helps to improve their performance for the completion of functional activities, effectively engage in routine tasks and roles, and support families, caregivers, school staff with appropriate modifications or adaptations of materials and environments (Asher et al., 2010).

Children with special needs may have perceptual problems, sensory problems, gross-motor difficulties, fine-motor problems, difficulty with daily living activities, organizational problems, attention span difficulties, and interpersonal problems (Pierangelo & Giuliani, 2002).

The evidence for this service requirement in Malaysia is timely to be explored. The exploration of the occupational performance of children with special education needs in the school context reveals the needs of school-based therapy services.

In this study visual perception, visual-motor integration, gross motor skills, handwriting skills, and school function were assessed.

Visual Perception

Dumont and Willis (2008) stated visual perception is most likely to be defined as the interpretation of visual stimuli, the intermediate step between simple visual sensation and cognition. It is not visual acuity or sensation. Moreover, it is not reading or other cognitive meanings.

Visual-motor Skills

Visual-motor skills are the ability to use vision to direct hand and body movements. It is reliant on adequate visual tracking, coordination of eye-head movements, and coordination of eye-hand movements. It is an important component for participation in school activities, as well as sports and plays activities (Schaaf et al., 2010)

Gross Motor Skills

Gross motor skills are defined as “motor skills that involve the large, force-producing muscles of the trunk, arms, and legs” (Ulrich, 2000). The fundamental motor skills include locomotor skills, non-locomotor actions, and object control (Williams & Monsma, 2017).

Handwriting Skills

Handwriting requires complex physical behaviour and needs the integration of cognitive, visual, and motor skills (Milone, 2007). Approximately 30 – 60% of class time in primary school is spent in fine motor and writing activities (McHale & Cermak, 1992). Handwriting difficulties can have implications for a child’s successful participation in school and play activities, potentially leading to problems in academic performance and lowered self-esteem (Bumin & Kavak, 2010).

School Function

School function refers to a student’s ability to perform important functional activities that support or enable participation in the academic and related social aspects of an educational programme. It mainly referred to the non-academic aspects of a school programme such as manipulating materials, responding to questions, moving about the classroom and school, addressing personal needs and interacting with peers, etc. (Coster et al., 1998).

The purpose of this research is to investigate the occupational performance levels among primary schoolchildren with special needs in the field of visual perception, visual-motor integration, gross motor skills, handwriting skills, and school function performances. This research will explore students' specific performance problems and recommend rehabilitation service requirements.

MATERIALS AND METHODS

This is an exploratory cross-sectional study with six months of data collection time in two years-study. The study included 121 students with special education needs (aged 6 – 12 years) from all Integrated Special Education Programme (ISEP) classes from all four primary schools in Penampang, Kota Kinabalu. The Universiti Malaysia Sabah Medical Ethics Committee approved this research with reference number UMS/SPU6.13/100-6/1/95. This research project was also approved by the Ministry of Education, Malaysia, and the Sabah State Education Department. Parents or caregivers provided informed consent for participating students, and all data were kept confidential. This project excluded students who cannot follow instructions and/ or did not have consent.

This study uses standardized assessments of visual perception, visual-motor integration (VMI), gross motor skills, handwriting skills, and school functions. Researchers personally reviewed the students' disability registration forms, kept on file in the school offices, to obtain medical reports with demographic data and disability types present in the study population.

The senior occupational therapist who was trained for all the tests used in this study conducted all assessment tests, assessed each child for one test per day, and conducted the tests in the early part of the school day. Each test took about 20 to 30 minutes. The occupational therapist administered visual perception, VMI,

and handwriting skills tests in a quiet room free from visual distractions (e.g., pictures, writing examples on the wall). All students used No.2 standard pencils without erasers for copying and writing in the VMI and handwriting skill tests. The occupational therapist conducted gross motor development skills outdoors in the school compound.

Motor-Free Visual Perceptual Test Third Edition (MVPT-3)

The occupational therapist conducted the MVPT-3 test individually to assess overall visual perceptual ability through spatial relationships, visual discrimination, figure-ground, visual closure, and visual memory. Performance in these areas provided a single score that represents the individual's general visual perceptual ability. The median reliability coefficient for ages 4 – 10 is 0.80, 11, and above is 0.89 (Reynolds, 2008).

Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery-VMI) Fifth Edition

Visual-motor skills are the ability to use vision to direct hand and body movements. It relies on adequate visual tracking, coordinated eye-head movements, and coordinated eye-hand movements. It is an important component for participation in school activities, as well as sports and plays activities (Schaaf et al., 2010). The test comprises a developmental sequence of 30 geometric forms, which need to be copied with paper and pencil. It is designed to assess the extent to which individuals can integrate their visual and motor abilities. The overall average reliability is 0.92 (Dumont & Willis, 2008).

Test of Gross Motor Development – 2 (TGMD-2)

Gross motor skills are motor skills that involve the large, force-producing muscles of the trunk, arms, and legs (Ulrich, 2000). This test

is a norm-referenced measure of common gross motor skills for identifying children who are significantly behind their peers in gross motor skill development, and who should be eligible for special education services in physical education. Although the TGMD-2 is a norm-referenced test for children aged 3 to 10 years old, the test has been used frequently in older children with disabilities (Woodard & Surburg, 2001).

The test categories are locomotor and object control, consisting of 12 skills. Locomotor skills include running, galloping, hopping, leaping, horizontal jumping, and sliding. Object control skills are striking a stationary ball, stationary dribbling, kicking, catching, overhand throwing, and underhand rolling. The coefficient alphas for both subtests are above 0.85 (Ulrich, 2000).

Test of Hand Writing Skills-Revised (THS-R)

Handwriting requires complex physical behaviour as well as the integration of cognitive, visual, and motor skills. The THS-R tests if neurosensory integration difficulties are contributing to students' learning problems. Assessment results can inform instruction in regular or special education settings, as well as in rehabilitation practices. An internal consistency reliability coefficient has a median of 0.61 to 0.85 (Milone, 2007)

School Function Assessment (SFA)

SFA refers to the non-academic aspects of a school programme such as manipulating materials, responding to questions, moving about the classroom and school, addressing personal needs, and interacting with peers. SFA is a type of criterion-referenced instrument, a judgment-based questionnaire for students with disabilities, which identifies their strengths and needs in important nonacademic functional tasks. School personnel who are familiar with the student's typical performance completed the SFA.

The test uses three scales for evaluating students – Participation, Task Supports, and Activity Performance. The internal consistency reliability coefficient was 0.92 to 0.98 and the test-retest reliability (standardization version) was 0.80 to 0.99 (Coster et al., 1998).

Data Analysis

The researchers used SPSS version 22 for MVPT-3, Beery-VMI, TGMD-2, and THS-R standard score descriptive analysis, and converted score frequency to classification shown as an ordinal achievement. SFA results were calculated by the frequency of student achievement on criterion cut-off scores for each scale of the overall SFA.

RESULTS

Out of 135 students, we received consent from the parents and caregivers of 124 students, and three students dropped out of the study for a total of 121 students who completed all five assessments. The reason for dropping out of three students was the inability to perform all five tests because of frequent absence from school. The sample mean age was 9.2 years ($SD = 1.5$). Males were 78.5% ($n = 95$) and females were 21.5% ($n = 26$). Intellectual disability was 43%, ADHD 24%, ASD 20.7%, Down syndrome 5%, speech impairment and speech delay 2.5%, specific learning disorder 2.4%, hearing impairment 1.7% and visual impairment was 0.8%.

Researchers used Cronbach's Coefficient Alpha method to test instrument reliability for the study population and found all five tests were highly reliable. The MVPT-3 and visual perception in VMI subtests consisted of 2 items ($\alpha = 0.803$), Beery VMI consisted of 3 items ($\alpha = 0.875$), TGMD-2 consisted of 2 items ($\alpha = 0.903$), THS-R consisted of 10 items ($\alpha = 0.926$), and SFA consisted of 25 items ($\alpha = 0.981$).

This study identified the study population’s occupational performance levels. Ordinal classification and descriptive test scores are shown in Tables 1, 2, 3, and 4.

MVPT-3 results in Table 1 showed that the students who obtained low average to very low were 69.5% (n = 84) while those with average to very superior were 30.6% (n = 37).

Table 1 MVPT-3 ordinal results by classification and descriptive results (n = 121)

Variable	Very low % (n)	Low % (n)	Low average % (n)	Average % (n)	High average % (n)	Superior % (n)
MVPT	49.6 (60)	8.3 (10)	11.6 (14)	19 (23)	9.9 (12)	1.7 (2)

Notes: MVPT-3 = Motor-Free Visual Perceptual Test-3
 Median standard score = 70.0, Std. IQR = 37

Beery VMI results demonstrated that the students who achieved Beery VMI below average to very low were 69.4% (n = 84) and average to very high were 30.5% (n = 37) (Table 2).

Table 2 Beery-VMI and subtest ordinal results by classification and descriptive results (n = 121)

Variable	Very low % (n)	Low % (n)	Below average % (n)	Average % (n)	Above average % (n)	High % (n)	Very high % (n)
VMI	33.1 (40)	22.3 (27)	14 (17)	23.1 (28)	3.3 (4)	4.1 (5)	–
Visual perception	27.3 (33)	14 (17)	20.7 (25)	32.2 (39)	4.1 (5)	–	1.7 (2)
Motor coordination	38 (46)	16.5 (20)	21.5 (26)	19 (23)	4.1 (5)	0.8 (1)	–

Notes: Beery-VMI = Beery Buktenica Visual Motor Integration
 Mean standard score Beery-VMI = 78.8, Std. Deviation = 20.5
 Mean standard score Visual perceptual = 81.2, Std. Deviation = 21.1
 Mean standard score Motor coordination = 75.5, Std. Deviation = 19.2

TGMD-2 results were interpreted for two age group (age 6 to 10 years and age 11 to 12 years).

TGMD results revealed that the students who obtained TGMD-2 results below average to very poor were 66.0% (n = 60) and average to very superior were 34.1% (n = 31) (Table 3).

Table 3 TGMD-2 Ordinal results by classification and descriptive results (ages 6 to 10 years) (n = 91)

Variable	Very poor % (n)	Poor % (n)	Below average % (n)	Average % (n)	Above average % (n)	Superior % (n)	Very superior % (n)
TGMD-2	42.9 (39)	15.4 (14)	7.7 (7)	22 (20)	8.8 (8)	2.2 (2)	1.1 (1)
Locomotor	34.1 (31)	15.4 (14)	17.6 (16)	23.1 (21)	9.9 (9)	–	–
Object control	35.2 (32)	12.1 (11)	17.6 (16)	25.3 (23)	5.5 (5)	3.3 (3)	1.1 (1)

Notes: TGMD-2 = Test of Gross Motor Development-2
 Mean standard score TGMD= 76.6, Std. Deviation = 24.2
 Mean standard score Loco-motor = 6.0, Std. Deviation = 4.0
 Mean standard score Object control= 6.2, Std. Deviation = 4.4

Gross motor development of the students aged over ten years, were interpreted in raw score to determine whether they could achieve the ceiling score at ten years old. If they could not achieve the ceiling raw score it meant that they were behind their peers in gross motor skill development. Figure 1 revealed that 29 students (96.7%) over 10

years old could not obtain TGMD ceiling raw score. Retarded locomotor and object control development were in 96.7% of the student ($n = 29$) and in 83.3% ($n = 25$) respectively. The students who achieved TGMD ceiling raw score were 3.3% ($n = 1$), subtest locomotor were also 3.3% ($n = 1$) and subtest object control were nearly 17% ($n = 5$).

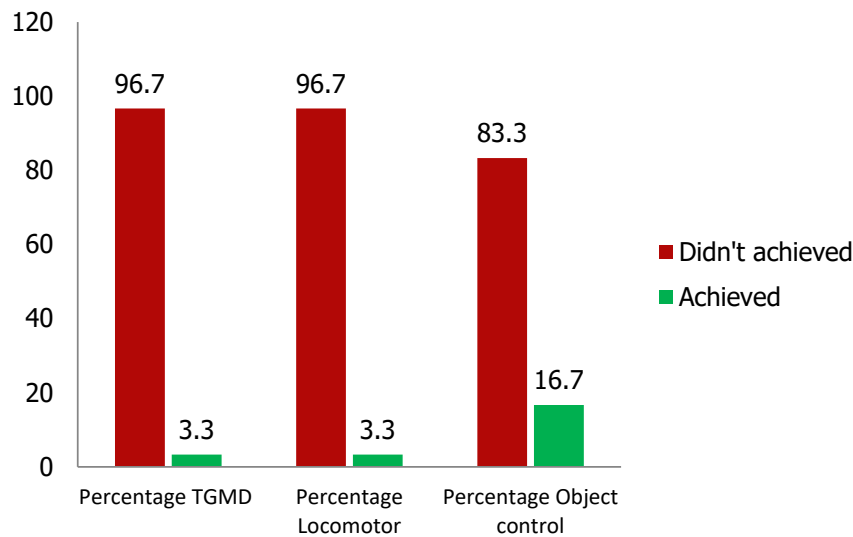


Figure 1 TGMD-2 results of percentage of TGMD, locomotor and object control for students aged 11 to 12 years old ($n = 30$)

The total students who were unable to achieve age level raw score in gross motor development, locomotor and object control skills were 73.6% ($n = 89$), 75.21% ($n = 90$) and 69.42% ($n = 84$) respectively.

THS-R results in Table 4 showed that the students who obtained an ordinal score below average to very low were 72.8% ($n = 88$) while average and above average were 27.3% ($n = 33$).

Table 4 THS ordinal results by classification and descriptive results ($n = 121$)

Variable	Very low % (n)	Below average % (n)	Average % (n)
THS	39.7 (48)	33.1 (40)	27.3 (33)

Notes: THS = Test of Hand Writing skills
Median standard score = 74.0, Std. IQR = 27.0

The children with below-normal MVPT scores, VMI scores, TGMD2 scores and THS-R scores compared to the children with normal MVPT scores, VMI scores, TGMD2 scores and THS-R scores demonstrated significantly lower scores in MVPT, VMI, TGMD2 and THS-R ($p < 0.001$) (Table 5).

Table 5 Comparing means of below normal and normal scores

	Group (n)	Mean (SD)	Mean difference (95% CI)	t-statistics^a(df)	p-value
MVPT	Below Normal (84) Normal (37)	62.75 (11.03) 103.70 (10.47)	40.95 (36.71, 45.20)	19.11 (119)	<0.001
VMI	Below Normal (84) Normal (37)	68.08 (12.97) 103.03 (11.81)	34.94 (30.01, 39.88)	14.03 (119)	<0.001
TGMD2	Below Normal (60) Normal (31)	61.70 (13.22) 105.42 (10.69)	43.72 (38.26, 49.18)	15.91 (89)	<0.001
THS-R	Below Normal (88) Normal (33)	66.72 (9.80) 95.36 (9.14)	28.65 (24.76,32.54)	14.58 (119)	<0.001

SFA Results

The frequency of the students who obtained below the criterion cut-off score for Part I participation in special education classroom functional activities and school-related activities was 81% ($n = 98$). Part II for the task support scales found that nearly 67% ($n = 81$) needed physical assistance while 60% ($n = 73$) required physical adaptation. Cognitive/ behavioural assistance was necessary for 64% ($n = 78$) of the students and 83% ($n = 100$) demanded cognitive/ behavioral adaptation (Table 6).

Table 6 SFA criterion cut-off score achievement: Part I (Participation) and Part II (Task support)

Assessment scales	Achieved criterion cut-off score % (n)	Below criterion cut-off score % (n)
Part I (Participation) Special education classroom	19.00 (23)	81.00 (98)
Part II Task supports		
Physical task – Assistance	33.06 (40)	66.94 (81)
Physical task – Adaptation	39.67 (48)	60.33 (73)
Cognitive/ Behavioral tasks – Assistance	35.53 (43)	64.47 (78)
Cognitive/ Behavioral tasks – Adaptations	17.36 (21)	82.64 (100)

In SFA Part III, the frequencies of students who obtained below criterion cut-off scores in activity performance (physical task) ranged from 34% to 73%. Regarding activity performance (cognitive/ behavioural tasks) the frequencies of students who obtained below criterion cut-off scores ranged from 66% to 87% (Table 7).

Table 7 SFA criterion cut-off score achievement: Part III (Activity performance)

Assessment scales	Achieved criterion cut-off score % (n)	Below criterion cut-off score % (n)
Part III Activity performance (physical tasks)		
Travel	27.27 (33)	72.73 (88)
Maintaining and changing positions	66.11 (80)	33.89 (41)
Recreational movement	38.02 (46)	61.98 (75)
Manipulation with movement	38.02 (46)	61.98 (75)
Using materials	40.50 (49)	59.50 (72)
Setup and clean up	43.80 (53)	56.2 (68)
Eating and drinking	38.84 (47)	61.16 (74)
Hygiene	42.98 (52)	57.02 (69)
Clothing management	44.63 (54)	55.37 (67)
Up/ down stairs	50.41 (61)	49.59 (60)
Written work	42.15 (51)	57.85 (70)
Part III Activity performance (cognitive/ behavioural tasks)		
Functional communication	24.80 (30)	75.2 (91)
Memory and understanding	32.23 (39)	67.77 (82)
Following social conventions	24.80 (30)	75.2 (91)
Compliance with adult directions and school rules	30.58 (37)	69.42 (84)
Task behaviour/ completion	23.14 (28)	76.86 (93)
Positive interaction	13.22 (16)	86.78 (105)
Behaviour regulation	18.18 (22)	82.82 (99)
Personal care awareness	33.88 (41)	66.12 (80)
Safety	22.31 (27)	77.69 (94)

DISCUSSION

The findings revealed that children with special needs in the study population had performance problems regarding visual perception, visual-motor integration, gross motor development, handwriting skills, and school function. These results were consistent with other studies among various types of children with special needs.

Demographic data

The study's demographic data indicated that three-quarters of the students were male, similar to statistics in the U.S. wherein approximately two-third of the students in special education programme were male,

highlighting strong evidence of gender imbalance in the incidence of disabilities in special education enrollments exists (Tschantz & Markowitz, 2003).

Visual Perception

Almost 75% of the students had visual perceptual skill impairment. This finding supported previous studies that found that children with hemiplegic cerebral palsy (CP), children with psychiatry disorders, dyslexia, and clumsiness children with Learning Disabilities (LD), scored significantly lower in visual perceptual skills (Ahmetoglu et al., 2008; Burtner et al., 2006; Daniels & Ryley, 1991; Griffin et al., 1993; O'Brien et al., 1988).

Visual-Motor Integration

Nearly 75% of students showed visual-motor integration (VMI) impairment. This is consistent with previous findings stating that children with psychiatry disorder, clumsiness children with LD, traumatic brain injury (TBI), Attention Deficits Hyperactive Disorder (ADHD), and hemiplegic CP performed lower score in VMI assessment (Burtner et al., 2006; Daniels & Ryley, 1991; O'Brien et al., 1988; Sutton et al., 2011).

Gross Motor development

Seventy-five per cent of students performed below the age level in gross motor development skills. This finding supported previous studies reporting that children with disabilities, ASD, ADHD, children with emotional, behavioural, and pervasive developmental disorders and intellectual disability (ID) exhibited lower scores in gross motor skills performance, locomotor and object control skills (Emck et al., 2009; Pan et al., 2009; Staples & Reid, 2010; Tseng et al., 2004; Westendorp et al., 2011; Woodard & Surburg, 2001).

Handwriting Skills

Seventy-five per cent of students have problems with handwriting skills. The THS result for this exploratory study was compatible with previous studies in which children with special needs who suffered from ASD, ADHD, and left hemiplegic, had difficulties in handwriting skills (Bumin & Kavak, 2010; Kushki et al., 2011; Racine et al., 2008).

School Function

A substantial number of students performed below the level expected for same-grade peers in the three parts of the SFA. Cognitive behaviour tasks in the activity performance displayed higher occurrences of problems when compared to physical tasks.

This may be related to a higher number of children with ID in this population.

This study results corresponded to previous literature showing that children with various types of disabilities, including motor impairment, ID, ADHD, visual impairment, Asperger's syndrome, hemiplegic CP, high functioning autism, and those who only have physical disabilities, and other health or neurological impairments, have school function problems compared to their same-age peers (Burtner et al., 2006; Coster & Haltiwanger, 2004; Eriksson et al., 2007; Potvin et al., 2013).

Comparing Means of Below Normal and Normal Scores

The children with special education needs who have below-normal scores for motor-free visual perception, visual-motor integration, gross motor skills, and handwriting skills, compared to the children with special education needs who have normal scores for these assessments had significantly lower scores. This finding demands the need for school-based occupational therapy in this population.

Recommendations and Clinical Implications

Students' inability to achieve functionality levels in physical and cognitive/ behavioural performance indicates the need for occupational therapists and other related health professionals' involvement to enhance students' school activity participation.

Some studies proved that intervention involving sensory integration, specific handwriting activities, and multisensory writing programmes with high levels of collaboration with teachers could improve the children's gross motor and fine motor abilities, visual-motor integration, visual-perceptual, and writing skills (Case-Smith, 2002; King, 2014; Lockhart & Law, 1994; Palisano, 1989; Reid et al., 2006; Whalen, 2002).

Study Limitations

This study used purposive sampling by using a homogenous sampling technique because the target group was children with disabilities from special education classes in public primary schools, who share the same (or very similar) characteristics or traits (e.g. age, gender, race, and disability type).

Future Research

It is suggested that future research projects will benefit from a random sampling of bigger sample sizes from various geographical areas to represent Malaysian children with these types of disabilities. Additionally, further projects could be the intervention studies of occupational therapies for children with occupational performance impairment in this population, as there is no Malaysian study yet to our knowledge.

CONCLUSION

The results, when considered clinically, supported the finding that primary school students with special education needs have impairments in their occupational performance. Children with special needs in integrated special education programs need school-based occupational therapy and other related rehabilitation services to enhance their quality of life, and to make it possible for these children to develop to their full potential. They will become empowered to contribute productively to the country, instead of being dependent on physical assistance and financial support. Moreover, regular school-based therapy implementation will provide effective services to parents or caregivers, since students will not need to go to hospitals for therapy appointments with significant absences from school.

CONFLICT OF INTEREST

The authors declare that they have no competing interests in publishing this article.

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