

**Teachers' experience for improving
Fine Motor Skills of children with
Down's syndrome in the context of
special education in Southern
Province of Sri Lanka.**

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Introduction-Sri Lanka

- It is surrounded by the Indian Ocean.
- A developing country
- Sinhala is the native language
- English is the second language
- Mixed ethnicity
- An island with rich heritage



Background

- Down syndrome (DS) is the commonest neuro-genetic cause of intellectual disability in the world.
- Fine Motor skills (FMS) means the ability of using hands for day to day living activities.
- Impairment of FMS in children with DS contributes to poor performance in Activities of Daily Living.

(Scott et al, 2015, Exner, 2005, Spano et al, 1999, Frank & Esbensen, 2015)

Background - Sri Lanka

- The government of Sri Lanka provides free education for all children.
- 35% of children with intellectual disability are enrolled in schools but end their school education within a few years.
- Attrition and absence rates are very high.
- Only 1% of the individuals with intellectual disability are employed and 5% are engaged in skills development programmes.

(Ministry of social Welfare,2003)

Purpose

- To investigate the teachers' experience on improving FMS of children with DS in the context of special education in the Southern Province of Sri Lanka.

Research Questions

- What are the deficits of FMS in children with DS in the classroom context?
- What are the classroom activity performance limitations of children with DS?
- What are the barriers to improve FMS of children with DS in the classroom context?

Research Objectives

- To determine teachers' experience on difficulties of FMS of children with DS in the classroom context.
- To determine teachers' experience on limitations of classroom activity performance of children with DS.
- To identify barriers of improving FMS of children with DS.

Participants

- 147 teachers
- Working in the context of special education in public schools in the Southern Province of Sri Lanka
- Having worked for more than 6 months

Data collection instrument

Self administered questionnaire

- Part 1: Basic demographic information
- Part 2: Deficits of FMS
- Part 3: Limitations of classroom performance
- Part 4: Barriers to improve FMS

Data collection, analysis and ethics

- Data collection was carried out by the principal investigator
- Permission for data collection was obtained from the director, special education and written informed consent was obtained from the participants.
- Data analysis was done using SPSS (version 17) statistical software package
- Ethical clearance was obtained from the Ethics Review Committee, University of Colombo, Sri Lanka

Results

Table 1. Basic characteristics of teachers

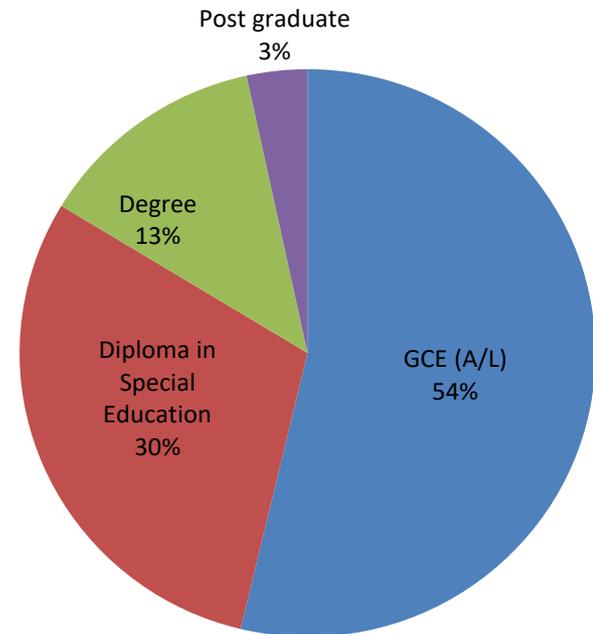
Characteristics of the teachers		No	%
Gender	Male	10	6.8
	Female	137	93.2
Age group	< 30 years	20	13.6
	30-49 years	74	50.3
	≥ 50 years	53	36.1
	Mean age ± SD 43.1±10.1yrs		
Teaching Experience	< 10 years	48	32.7
	10-19 years	29	19.7
	≥ 20 years	70	47.6
	Mean experience ±SD 15.9±8.9yrs		

Results

Profile of teachers

- Age of teachers ranged from 22-59 years.
Mean age was 43.1years
- Majority of the teachers (54%) had passed GCE (A/L) exam.
- Nearly 30% of teachers had Diploma in special education
- Nearly 48% of teachers had over twenty years of experience as a teacher.

Figure 1. Distribution of education level of teachers

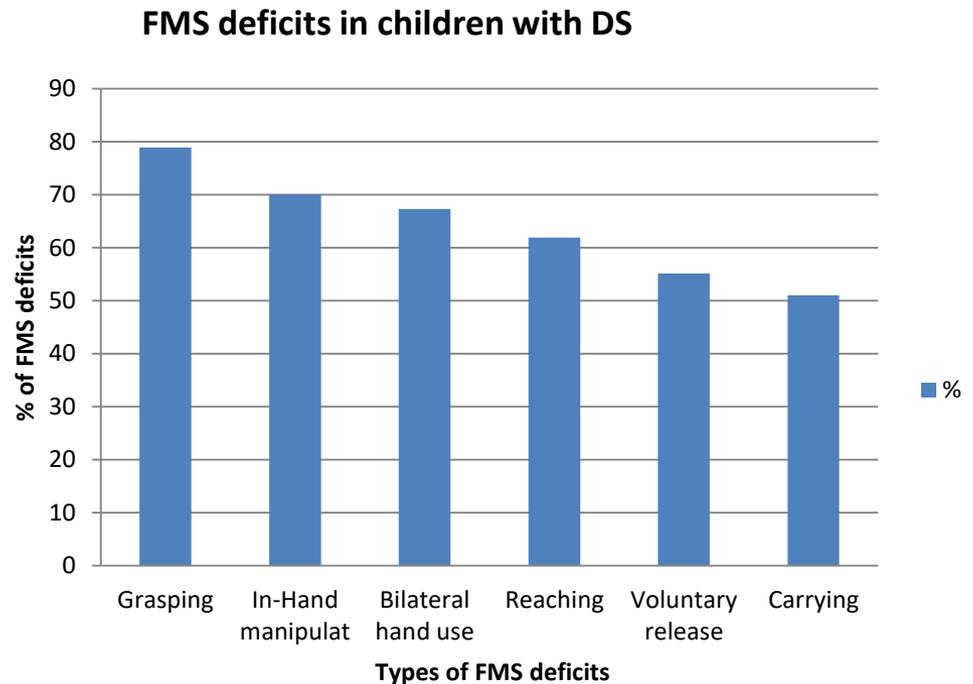


Results

Distribution of FMS deficits identified in children with DS

- Approximately 80% of teachers stated that children with DS have difficulties in performing various types of grasps.
- Over 60% of teachers stated that children with DS had deficits in bilateral hand use, in-hand manipulation and reaching .

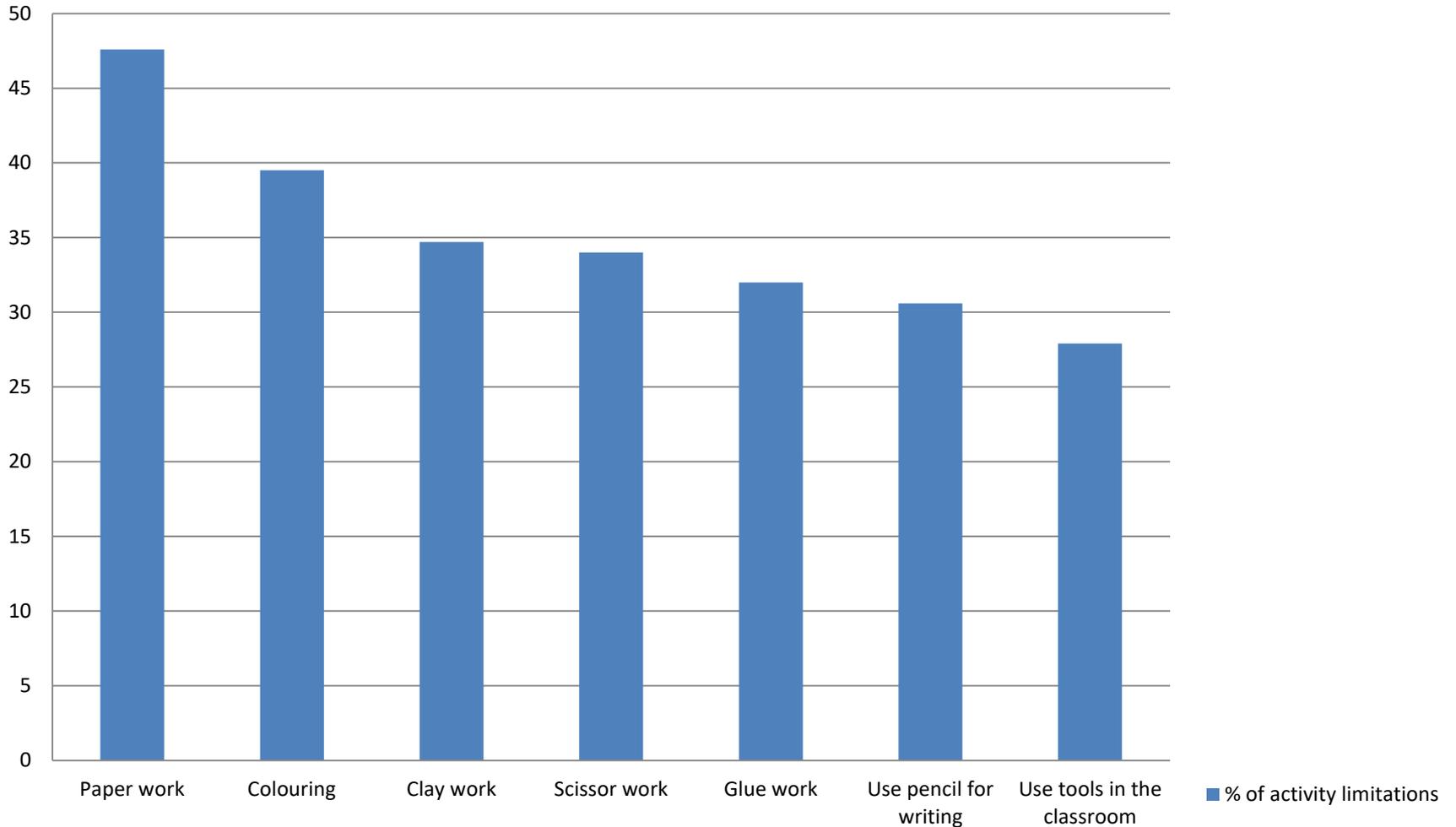
Figure 2. FMS deficits in children with GS



Results

Classroom activity limitations in children with DS

Figure 3. Classroom activity limitations

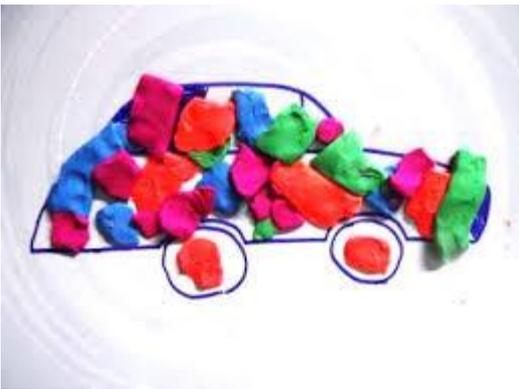


Results

- Paper work was identified as the main classroom activity limitation of children with DS by 48% of teachers.
- Approximately 40% of teachers said that children with DS had problems in colouring a picture.
- Approximately 35% of teachers stated that children with DS had difficulties in clay work and scissor work .
- Nearly 32% of teachers identified glue work as one of the limitations of children with DS in the classroom.

Results - Paper work

- **Limitations of paper work,**
 1. Folding a paper
 2. Tearing a paper along a line
 3. 2D and 3D paper work



Results - Colouring

- **Limitations of colouring,**
 1. Colouring outside the boundary of a picture
 2. Using two or more colours in a picture
 3. Select suitable colours in a picture
 4. Use different tools for colouring (fingers, paint brush, sponge, colour pencils & pens)



Results - Clay and scissor work

- **Limitations in clay work**

1. Make three dimensional objects using clay
2. Using two colours of clay to make objects

- **Limitations in scissor work**

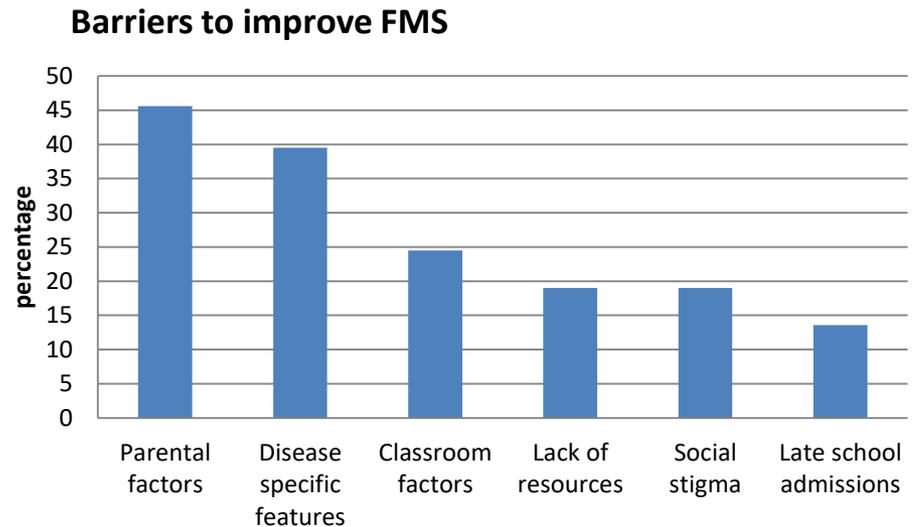
1. Cutting along a line, a circle, a square
2. Cutting around a simple picture

Results

- **Barriers to improve FMS of children with DS**

- Nearly 46% of teachers stated that parental factors were a major barrier to improve FMS.
- Approximately 40% and 25% of teachers identified disease specific features and classroom factors, respectively, as barriers to improve FMS.

Figure 4. Barriers to improve FMS



Parental factors

- Attitudes
- Busy life schedule
- Ignoring home work
- Helplessness, learned behaviours/stigmata
- Irregular school attendance
- Concentrates mainly on gross motor skills
- Limited financial resources

Classroom factors

- Multiple disabilities in the same classroom
- Lack of physical resources
- Disturbances in the surroundings
- Lack of human resources
- Lack of updated knowledge
- Lack of standardized tools, screening assessments and training programmes for teachers

Disease specific features

- Slow movement patterns,
- Low muscle tone,
- Low motor coordination,
- Ligament laxity
- Intellectual disability

(Galli et al, 2010, Grieco et al, 2015)

Conclusions

- Major FMS deficits were grasping, in-hand manipulation and bilateral hand use
- Major classroom performance limitations were paper work, colouring and scissor work
- Major barriers to improve FMS were parental factors, disease specific features and classroom factors.
- Teachers recommended regular practice of FMS according to individual need.

Future Research

- Future studies are needed to design a culturally specific FMS assessment tool and intervention methods for Sri Lanka
- Future studies are needed to overcome barriers to improve FMS in Sri Lanka.

Acknowledgments

- The teachers
- The Director of special education

THANK YOU