



Danderyds Sjukhus

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I TRYGGA, SÄKRA HÄNDER

**Logopedkliniken**



# The Danderyd Model of Dyscalculia Assessment

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# Logopedkliniken

- The largest Speech-Language Pathology clinic in Sweden (~100 SLP's)
- Assessment and treatment of a broad range of speech and language related disorders, as well as swallowing and voice disorders
- Dyslexia and dyscalculia assessments
- Reference classification: ICD-10 (ICD-11)



# Assessment of Dyscalculia within the Swedish Health Care System

- It is mainly SLP's who assess dyscalculia
- Dyscalculia assessment evolved from dyslexia assessment in the late 1990's
- Few Swedish regions have the resources to assess dyscalculia. Logopedkliniken is the main provider of dyscalculia assessments in Sweden. Nationwide admittance (21 % from other regions)

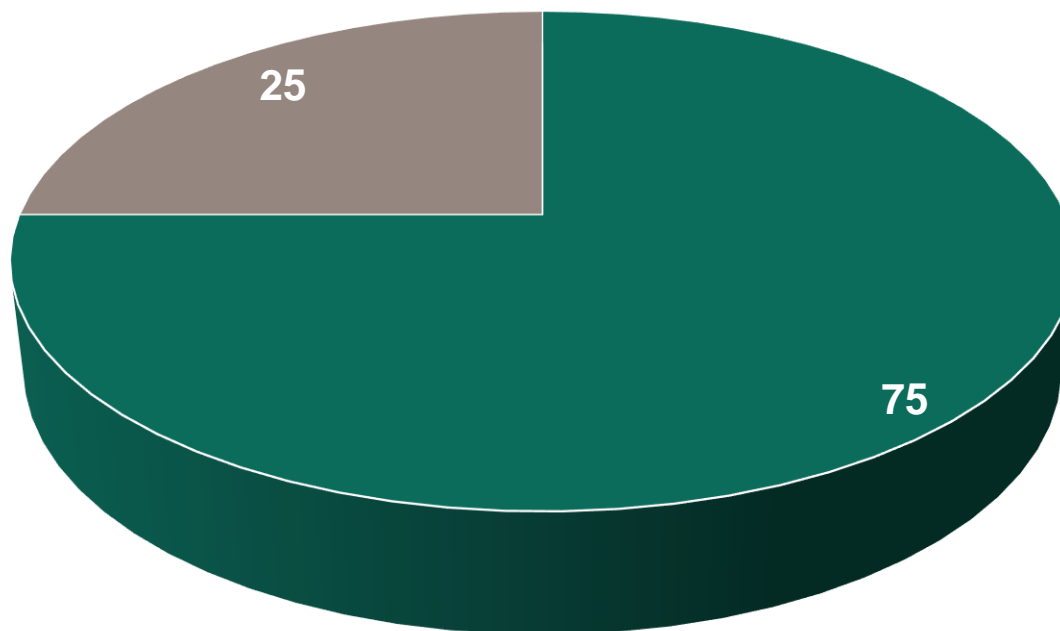


# Statistics 2020

- 450-500 patients were referred to Logopedkliniken for dyscalculia assessment
- Mainly children and adolescents from 10-17 years, but also adults (80/20)
- Some come for a combined dyslexia and dyscalculia assessment, others only for dyscalculia
- 47 % had at least one other diagnosis within language and/or neuropsychiatry
- 44 % had undergone a general cognitive evaluation



## Referrals (%) 2020



■ School Health Services

■ Others

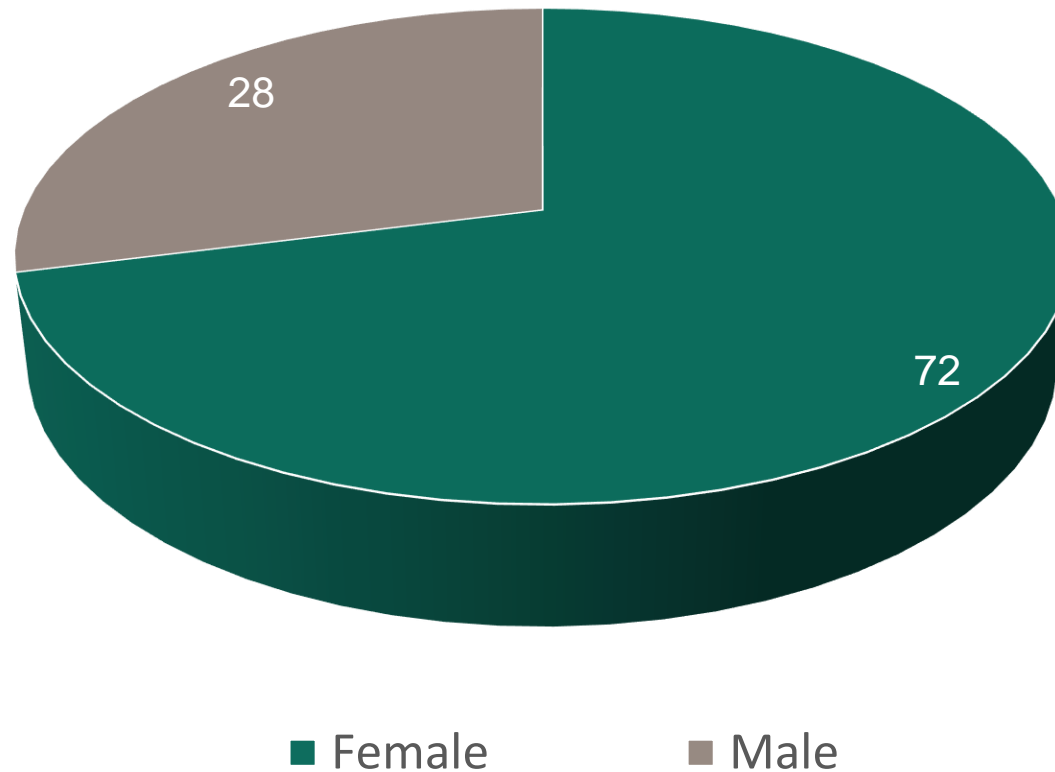


# Referral

- School Health Services
- Child and Adolescent Psychiatry
- Other SLP clinics
- Health Centres
- Adult Psychiatry
- Self-referral



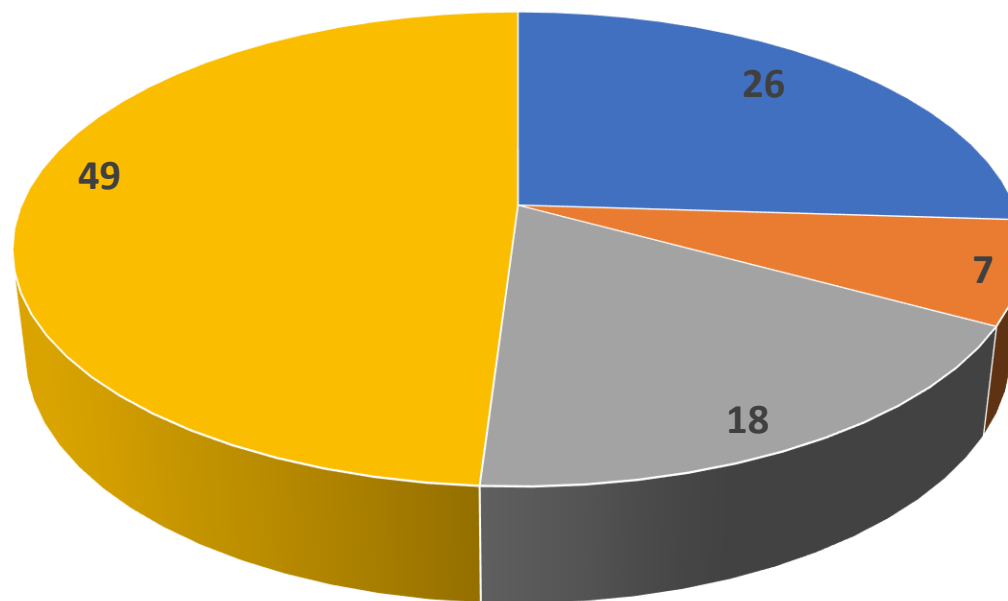
## Gender ratio of referrals 2020







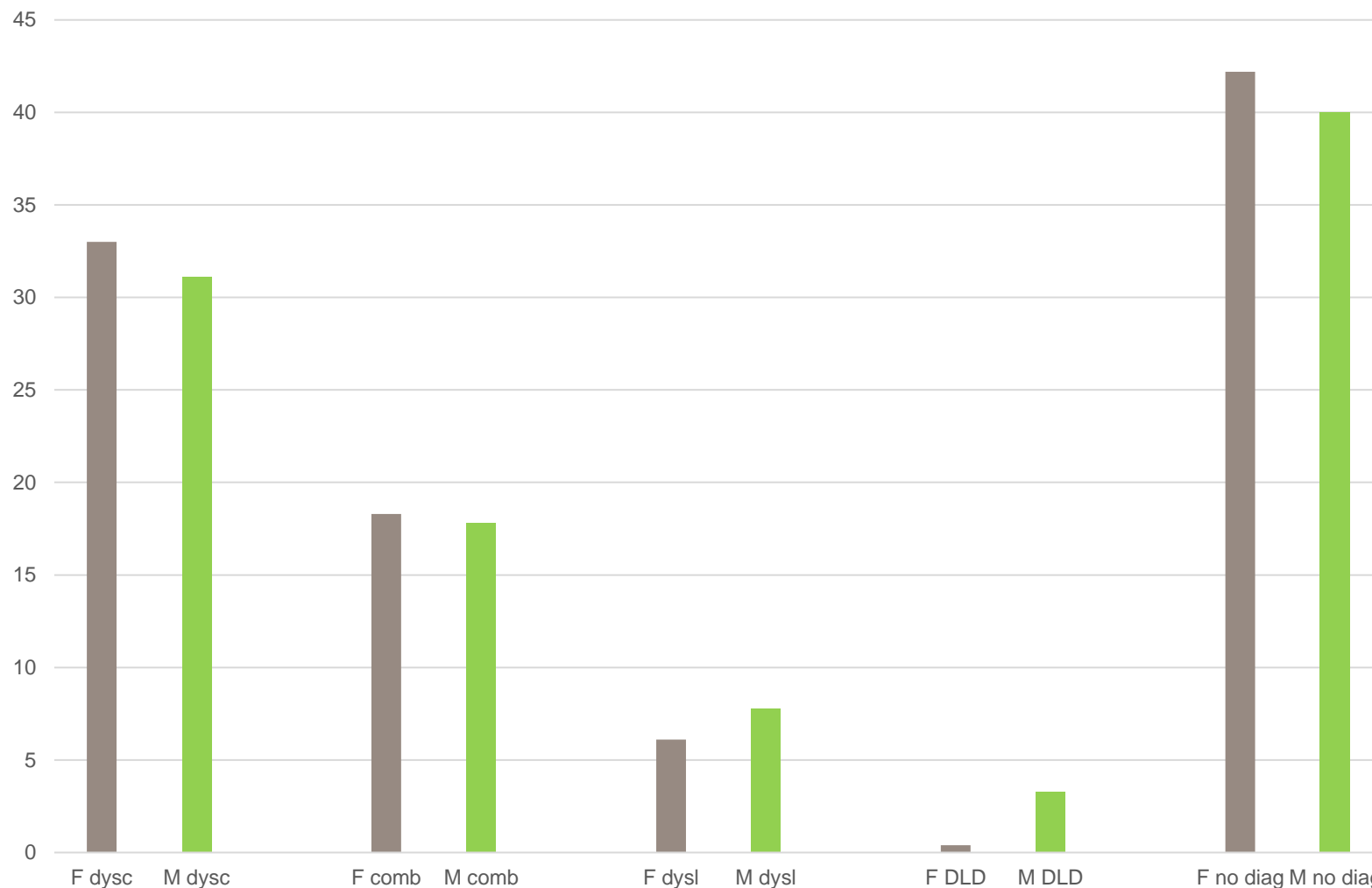
## Outcome 2020 (%) Based on 320 assessments



■ Dyscalculia   ■ Dyslexia   ■ Combined   ■ No diagnosis



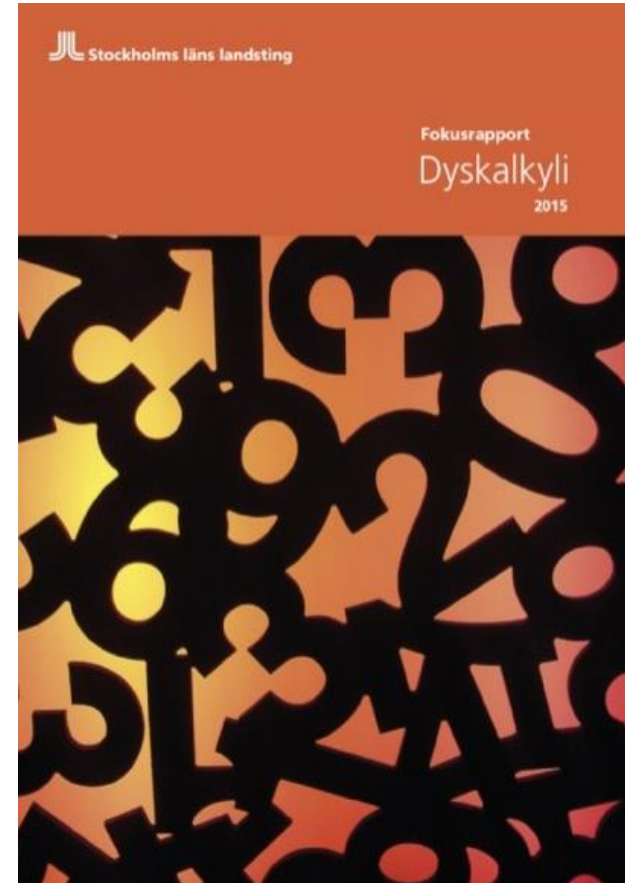
# Gender ratio of outcome 2020





# Assessment development

- Fokusrappport (status report) dyskalkyli (2015)
- Stockholms Läns Landsting (Region Stockholm)
- A research overview
- Forms the basis for the actual assessment procedure
- No national clinical guidelines to date – a work in progress
- National clinical guidelines for dyslexia assessment exist since 2017





# Background information

- The referral
- Questionnaire filled in by teachers
- Questionnaire filled in by parents
- Other previously undergone assessments within neuropsychiatry and/or Speech-Language Pathology
- General cognitive abilities assessment not mandatory



# Abilities tested

## **Both domain-specific and domain-general cognitive abilities:**

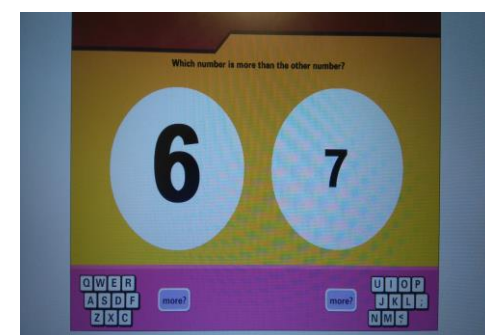
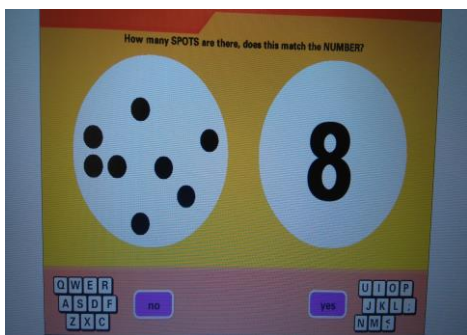
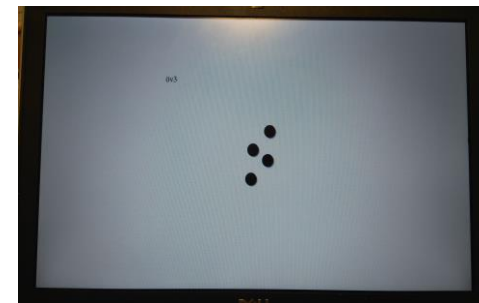
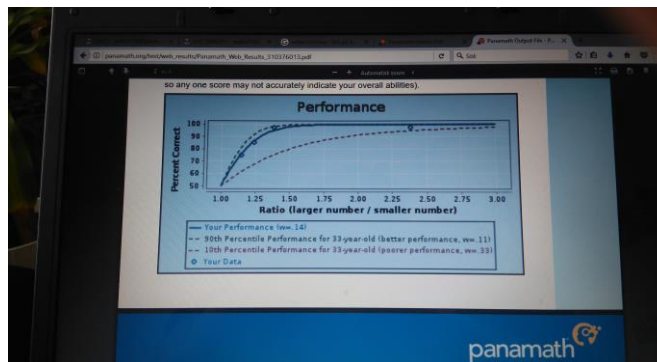
- *Subitizing, enumeration and numerical magnitude comparison*
- *Accessing numerical value from symbols*
- *Digit and number comparison, understanding of place value, number sense tasks*
- *Arithmetic ability (fluency, strategies)*

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- *Processing speed*
- *Auditory short-term and working memory*
- *Visuo-spatial skills*
- *Problem solving in mathematics and logical thinking*
- *(Telling time, language comprehension, reading skills)*



# A selection of tests





# Dyscalculia?

- Persistent difficulties in acquiring basic mathematical skills that hinders normal functioning in both home and school/academic/work context
- The difficulties are not better and completely explained by general cognitive ability, insufficient language skills, sensory deficits or educational deprivation/insufficient schooling or attendance
- Basic numerical difficulties (nonsymbolic and/or symbolic) support the diagnosis, but is not an absolute criterion
- Dyscalculia often co-occurs with other diagnoses that affect learning, such as dyslexia, ADHD and DLD



# Value of assessment

- Explanation of difficulties
- Mapping strenghts and weaknesses
- Increasing self-insight
- Guidance for teachers
- Information to authorities, higher education and employers