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Prevalence of oral motor disorders in Parkinson's disease (PD)

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3 domains



speech
swallowing
saliva control

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Presentation

Guideline: speech therapy is important for PD patients (see lecture 05.01)

Question:
What is the prevalence of oral motor disorders in PD?

Method:

1. Systematic reviews of prevalence rates dysarthria, dysphagia and drooling in PD
2. Prevalence rates based on 100 PD patients from Parkinson Centre Nijmegen (ParC) + consequences: referral for treatment y/n

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Prevalence rates from literature: dysarthria - subjective

Study	N	Assessment	%	Corr. severity
Hartelius & Svensson, 1994	249	Question: speech and voice worse than prior to disease onset	70	NR
Coates & Bakheit, 1997	48	Question: difficulty making myself heard or understood by strangers	46	No
Miller et al., 2007	125	Question: voice not as good as it used to be	76	Yes

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Prevalence rates from literature: dysarthria - objective

Study	N	Assessment	%	Corr. severity
Coates & Bakheit, 1997	48	Yorkston & Beukelman intelligibility test - 8 independent trained raters	65	r = 0.38
Ho et al., 1998	48	Speech sample with FPCP* - 2 independent trained raters	74	NR
Miller et al., 2007	125	Yorkston & Beukelman intelligibility test - blind by everyday listeners	70	Yes

* Functional Parkinson's Communication Profile

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Pooled prevalence

Weighted by sample size:

- patients: **68%** (95% CI 63.8-72.7)
- listeners: **71%** (95% CI 66.7-75.9)

Conclusion:

- about **70%** of home-living PD patients have speech complaints
- subjective and objective judgements produce similar rates

Published as: Kalf et al. 2009. Posterpresentation at 13th International Congress of Movement Disorders Society, Paris. *Movement Disorders, in press.*

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Prevalence rates from literature: dysphagia - subjective

Study	N	Assessment	%	Corr. severity
Eadie & Tyler, 1965	76	Question: any difficulty in swallowing	47	Yes
Edwards et al., 1991	94	Question: any difficulty in swallowing	52	Yes
Hartelius & Svensson	249	Question: ability to chew and swallow worse than prior to onset	41	NR
Clarke et al., 1998	64	Question: any difficulty swallowing food	30	Yes
Siddiqui et al., 2002	44	Question: choking	30	No
Verbaan et al., 2007	420	Question: difficulty swallowing or choked in past month (SCOPA-AUT)	55	Yes
Martinez-Martin et al., 2007	525	Question: difficulty swallowing or choked in past month (PD NMSQuest)	28	Yes

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Prevalence rates from literature: dysphagia - objective

Study	N	Assessment	%	Corr. severity
Coates & Bakheit, 1997	53	Chicago Assessment Scale: - score < 5 on at least one of 10 items	81	r = 0.70
Clarke et al., 1998	58	Swallowing speed: - < 10 ml/s	72	Yes
Nilsson et al., 1996	75	ROSS-test - any abnormality in single swallow or forced repetitive swallow	87	No

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Pooled prevalence

Weighted by sample size:

- subjective: **39%** (95% CI 30-48)
- objective: **83%** (95% CI 71 - 95)

Pooled relative risk against healthy individuals:

- 4.8** (95% CI 2.7 - 8.4)

Conclusions:

- Clinician-rated dysphagia is highly prevalent, but patient-rated swallowing complaints only half as much.
- This difference is probably an expression of the distinction between oropharyngeal changes and functional swallowing.

Published as: Kalf et al. 2009. Posterpresentation at 17th annual Dysphagia Research Society Meeting, New Orleans. *Dysphagia*, in press.

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Prevalence rates from literature: drooling - subjective

Study	N	Assessment	%	Corr. severity
Eadie & Tyler, 1965	76	Question: ever dribbling of saliva or wet pillow	74	Yes
Edwards et al., 1991	94	Question: excess saliva in mouth or drooling	70	NR
Hartelius & Svensson	249	Question: drink or saliva escaping between lips	62	NR
Scott et al., 2000	948	Question: problems with salivary flow	40	NR
Siddiqui et al., 2002	44	Question: wet pillow or saliva loss	52	No
Verbaan et al., 2007	420	Question: dribbling of saliva out of mouth in past month	73	Yes
Martinez-Martin et al., 2007	525	Question: dribbling of saliva out of mouth in past month during daytime	32	NR

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Pooled prevalence

Weighted by sample size:

- 56%** (95% CI 44-67)

Pooled RR: **5.5** (95% CI 2.1-14.4)

Conclusions:

- In its widest definition drooling can be present in half of all PD patients,
- but further analysis shows that only in a quarter of PD patients drooling appears to be a frequently occurring problem.

Published as Kalf et al. 2009. *Journal of Neurology*, March 14 (Epub ahead of print)

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Outcomes ParC

Parkinson Centre Nijmegen (ParC)
PD patients receive multidisciplinary assessment and advice for referral

- medical,
- paramedical (physio-, occupational, speech therapy)
- psycho-social



www.parkinsonweb.nl

Assessments

- Dysarthria severity scales (Therapy Outcome Measures, Dutch translation, see poster 91)
- Dysphagia severity scales (TOM)
- Drooling severity scale:
 - no complaints
 - feeling of accumulation of saliva only
 - saliva loss

Outcomes:

- No treatment needed
- Only one-time instructions/cueing needed
- Referral for further SLT treatment

Population

Characteristics:

- Age: mean 65 years (± 9.6)
- Disease duration: mean 7 years (± 4.9)
- Hoehn & Yahr stage: median 2.5 (1 to 5)

Average for home-living PD patients

Patients with dysarthria

Severity	dysarthria (%)	communication (%)
very severe	0	0
severe	6.1	0.7
moderate	18.4	4
mild	36.8	3
minimal	33.3	47.8
normal	6.6	22.8

Conclusion:

- 60% mild to severe dysarthria (93% minimal to severe)
- 77% communicative changes

Patients with dysphagia

Severity	dysphagia (%)	functional intake (%)
very severe	0.8	0.8
severe	2.5	0
moderate	1.5	0
mild	9.3	7.7
minimal	47.7	2
normal	40.8	62.3

Conclusion:

- 59% minimal to severe dysphagia
- 38% changed functional intake

Patients with drooling

Category	Percentage (%)
saliva loss	28.6
complaints	23.3
no complaints	48.1

Conclusions:

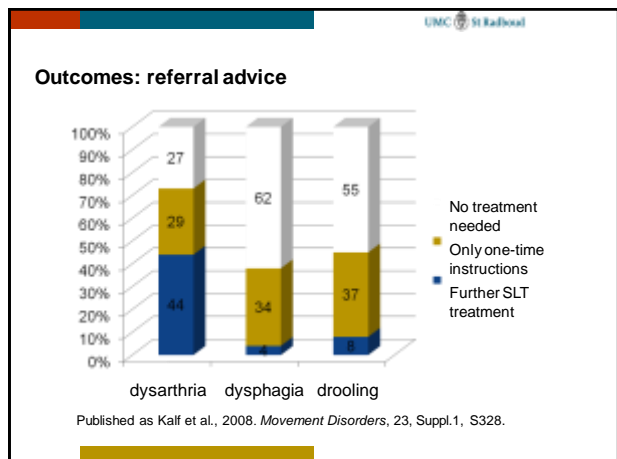
- 52% saliva complaints
- 29% saliva loss

Comparison literature and ParC

	Literature	ParC
Dysarthria	70%	60% (93%)
Dysphagia	39% (83%)	38%-59%
Saliva complaints (total)	56%	52%
Saliva loss	$\pm 25\%$	29%

Conclusion: reasonably comparable

Note: all community-dwelling PD patients



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Take home message

- Oral motor disorders in PD are very frequent (> 50%).
- Hypokinetic dysarthria is most common and needs the most treatment.
- The majority of swallowing and saliva complaints can be treated with one-time instructions.
- Indeed, hypokinetic dysarthria can be an early sign of idiopathic PD, but dysphagia and drooling are typically late signs (or red flags for atypical parkinsonism)

(Muller et al. *Arch Neurol* 2001 Feb;58(2):259-64)

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