Sleep disturbances as risk factors for future sickness absence

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Background

- Sleep disturbances including short and long sleep duration associated with
  - ➢ obesity, hypertension, stroke, stress, diabetes, CVD, pain, depression etc.

- Little/mixed results on associations between sleep disturbances, sleep duration and sickness absence (SA)
  (Nakashima et al 2011; Westerlund et al 2008; Lallukka et al 2013; Lallukka et al 2014; Madsen et al 2016)

- Have not accounted for familial factors (genetics and shared environment)

  - ➢ Sleep and sickness absence moderately heritable
  (Gasperi et al 2017; Goel 2017; Åkerstedt el al 2017; Svedberg et al 2012; Gjerde et al 2013)

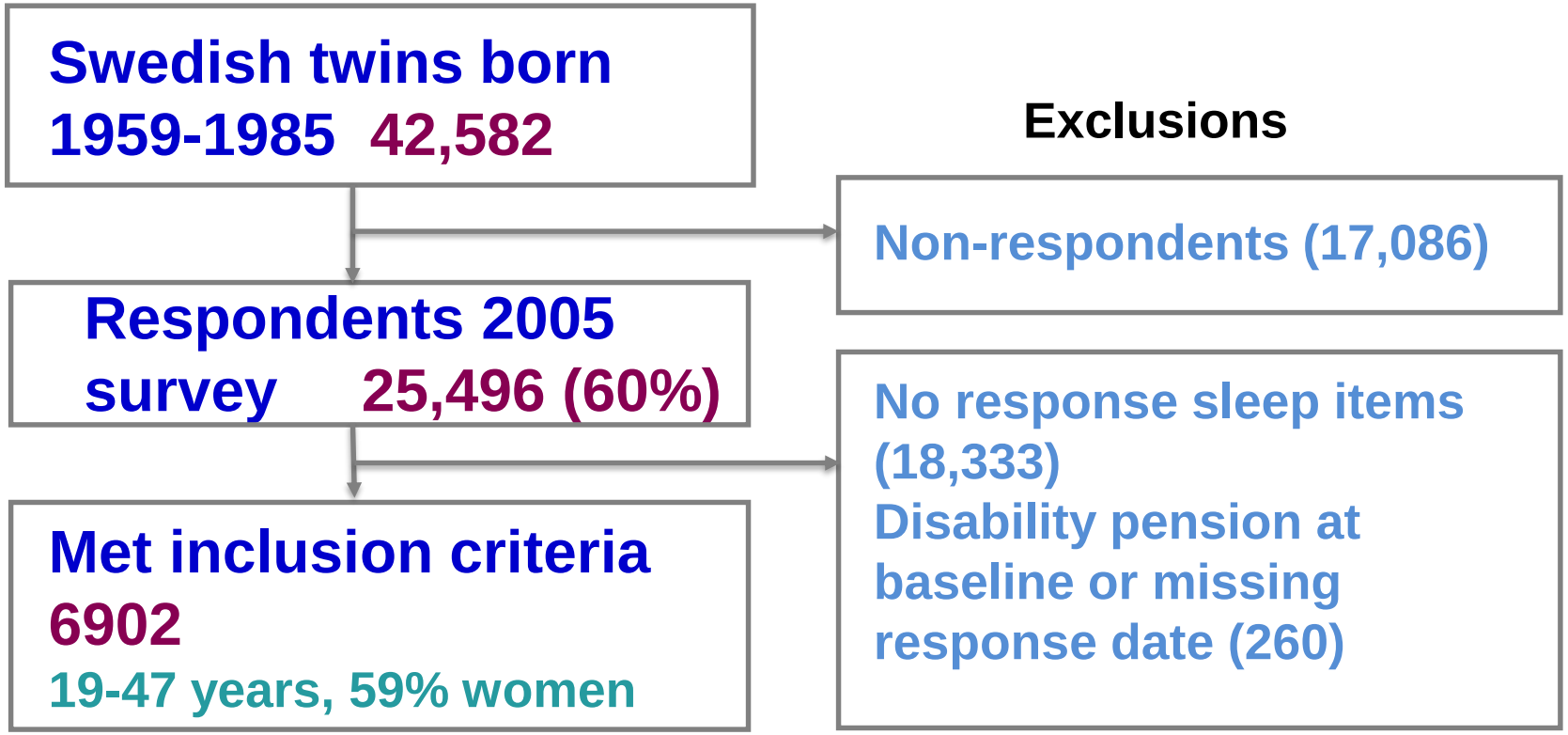
No conflicts of interest are declared

Objective

- To study sleep disturbances and sleep duration in association with future sickness absence (SA)

→also with control for familial factors (genetics and shared family environment)

Study population from The Swedish Twin project Of Disability pension and Sickness absence (STODS)



Study design: Prospective cohort study
National register data: incident sick leave spells (>14 days) (yes/no)
Follow-up: from response date (2005) until December 31, 2013

Sleep disturbances

Items from Karolinska Sleep Questionnaire (KSQ short form)

(Ingre et al., 2000; Kecklund and Åkerstedt, 1992)

How often, during the last 6 months, have you been affected by this problem?:

Disturbed sleep

Non-restorative sleep

(not well-rested on awakening)

Never (ref)

Sometimes (seldom, sometimes)

Often (usually, always)

Sleep quality

Based on mean value of 3 sleep items from KSQ

How often, during the last 6 months, have you been affected by this problem?:

Difficulties falling asleep

Disturbed sleep

Premature awakenings

Response alternatives:

Never, Seldom, Sometimes, Usually, Always

Sleep quality index (1-5): Higher score indicates poorer sleep quality

Sleep duration

- The time between reported time of lights out and rising time (time in bed)

  - reported in full and half hours by respondents

  Coded: ≤6.5 h
  7-8 h (ref)
  8.5-9 h
  > 9 h

Potential confounders

Sociodemographic: Gender, Age, Education, Children at home

Health related behaviors: Smoking, Alcohol consumption, Physical activity, BMI

Morbidity/health symptoms: Neck/back pain, Self-rated health, Depressive symptoms, Previous history of SA

Statistical analyses

Descriptive: frequencies and proportion for exposures and covariates

Logistic regression models (OR, 95% CI)

The whole cohort and stratified by gender

Co-twin control analysis was applied by using conditional logistics regression models

→ adjust for familial factors (genetics and shared environment)

→ complete same-sex twin pairs discordant for SA

Results

	Total Sample (n=6902)	
	n	%
Disturbed sleep		
Never	1014	14.7
Sometimes	4940	**71.6**
Often	858	12.4
Missing	89	1.3
Non-restorative sleep		
Never	307	4.5
Sometimes	4752	**68.8**
Often	1760	25.5
Missing	83	1.2
Sleep quality Index (1-5)	6802	2.3 (mean)
Missing	100	1.5
Sleep duration		
≤6.5 h	1040	15.1
7-8 h	3801	**55.1**
8.5-9 h	1290	18.7
≥9.5 h	499	7.2
Missing	272	3.9

37.7% of the sample had at least one SA spell (>14 days) during follow-up

Women reported sleep problems more often,
and longer sleep duration

Results

		Sickness absence	
		OR (95% CI)	
	Age and sex adjusted	Adjusted[1]	Adjusted familial factors[2]
Disturbed sleep			
Never (reference)			
Sometimes	1.15 (0.99-1.34)	0.98 (0.84-1.15)	0.46 (0.26-0.83)
Often	**1.92 (1.58-2.33)**	1.23 (0.99-1.53)	0.65 (0.30-1.39)

[1] Adjusted for age, sex, neck/back pain, previous SA, depressive symptoms and self-rated health.

[2] Identical and fraternal same-sex twin pairs (n=234) discordant for SA; adjusted for genetics, shared environment, age, sex.

Results

		Sickness absence	
		OR (95% CI)	
	Age and sex adjusted	Adjusted[1, 2]	Adjusted familial factors[3]
Non-restorative sleep[1]			
Never (reference)			
Sometimes	1.19 (0.92-1.54)	1.07 (0.78-1.47)	2.08 (0.72-6.01)
Often	**1.49 (1.37-2.00)**	1.22 (0.89-1.71)	2.64 (0.87-7.97)
Sleep Quality index[2] (per unit increase 1-5)	**1.36 (1.27-1.45)**	**1.24 (1.15-1.33)**	1.06 (0.80-1.41)

[1] Adjusted for age, sex, alcohol consumption, physical activity, smoking, neck/back pain, self-rated health
[2] Adjusted for age, sex, self-rated health
[3] Identical and fraternal same-sex twin pairs; adjusted for genetics, shared environment, age, sex

Results

		Sickness absence	
		OR (95% CI)	
	Age and sex adjusted	Adjusted[1]	Adjusted familial factors[2]
Sleep duration			
≤ 6.5 h	**1.19 (1.02-1.34)**	**1.28 (1.06-1.53)**	0.67 (0.37-1.23)
7-8 h	Ref	Ref	Ref
8.5-9 h	1.04 (0.91-1.19)	1.01 (0.85-1.19)	0.77 (0.46-1.27)
> 9 h	**1.25 (1.03-1.53)**	**1.43 (1.12-1.83)**	1.77 (0.77-4.08)

[1] Adjusted for age, sex, alcohol consumption, smoking
[2] Identical and fraternal same-sex twin pairs; adjusted for genetics, shared environment, age, sex

Strengths

- Prospective cohort design
- National register data on SA – no loss to follow-up
- Control of several confounders including familial factors

Limitations

- Exposure data only collected at baseline
- Subjective measurements of sleep disturbances and covariates
- Somewhat low response rate in STAGE (60 %)
- Low response rate to sleep items
- Low power due to reduced sample size in twin-pair analyses

Conclusions

- Sleep quality, short- and long sleep duration associated with future SA
- Familial factors seem to influence the association between poor sleep quality, short sleep duration and future SA
- Long sleep duration was independently associated with SA
  →adjusting for familial factors
- No clear gender difference
- To prevent sleep disturbances may reduce the risk of future SA

Thank you for your attention!

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