

Swiss TPH



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Predictors of overestimation of recalled mobile phone use among children and adolescents

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Introduction

- Increase of mobile phone ownership and use among children and adolescents in the last 10 years.
- Worries about adverse health effects.
- Until recently: most studies among adults.
- Brain tumours, sleep disturbances, behavioural problems, problematic use of mobile phones etc.

Example

RESEARCH ARTICLE

Open Access

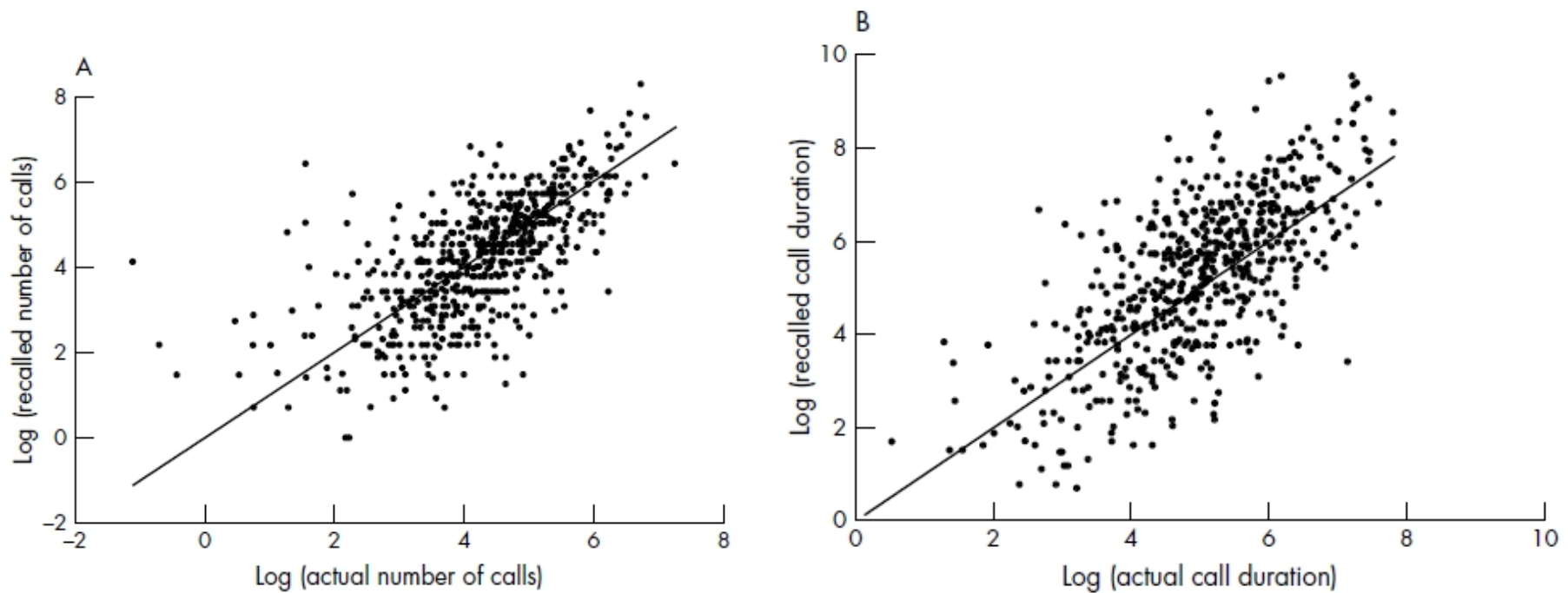
Mobile phone use and stress, sleep disturbances, Cross-sectional associations

		Sleep disturbances		Symptoms of depression	
		PR	95%-CI	PR	95%-CI
Mobile phone use					
Men	Low	1.0		1.0	
	Medium	1.1	0.87-1.47	1.1	0.90-1.43
	High	1.7	1.40-2.19	1.3	1.02-1.58
Women	Low	1.0		1.0	
	Medium	1.1	0.98-1.31	1.1	0.98-1.26
	High	1.4	1.21-1.56	1.2	1.06-1.34

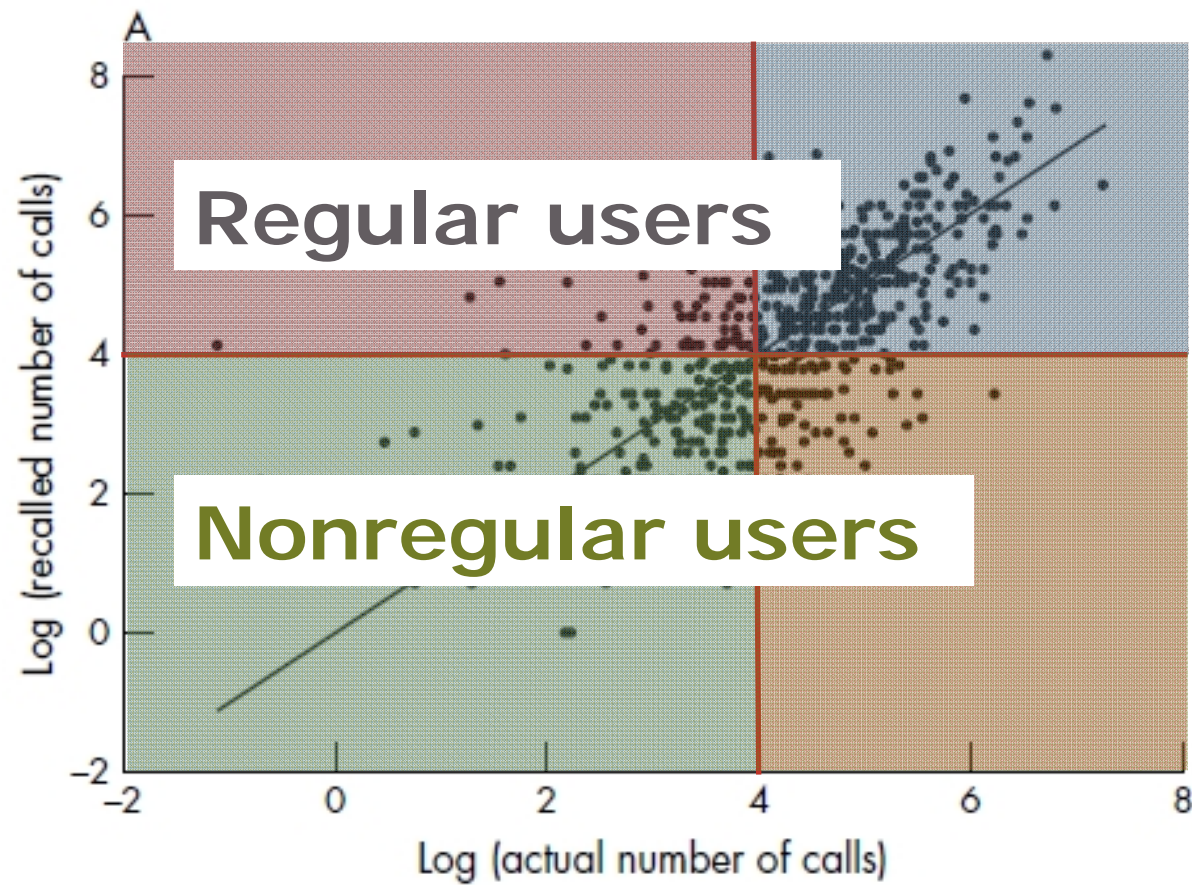
Introduction

- Studies mainly rely on self-reported mobile phone use.
- Accuracy of recall among adults is poor overall.

Recall accuracy of adults



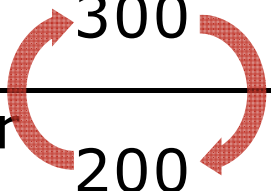
Exposure misclassification



How bad is it?

	Case Control	
Regular user	300	600
Nonregular user	200	400

	Case Control	
Regular user	300	600
Nonregular user	200	400



$$OR = \frac{300 \times 400}{600 \times 200} = 1 \quad OR = \frac{280 \times 440}{560 \times 220} = 1$$

20% random misclassification

How bad is it?

	Case	Control
Regular user	375	600
Nonregular user	125	400

	Case	Control
Regular user	375 325	600 560
Nonregular user	125 175	400 440

$$OR = \frac{375 \times 400}{600 \times 125} = 2$$

$$OR = \frac{325 \times 440}{560 \times 175} = 1.46$$

20% random misclassification

How bad is it?

	Case	Control
Regular user	300	600
Nonregular user	200	400

	Case	Control
Regular user	300 340	600
Nonregular user	200 160	400

$$OR = \frac{300 \times 400}{600 \times 200} = 1 \qquad OR = \frac{340 \times 400}{600 \times 160} = 1.42$$

20% differential misclassification

Potential problems

- Inaccurately reported mobile phone use could lead to exposure misclassification.
- Random: usually bias towards 1.
- Differential: either direction possible.
- Bias if estimation of mobile phone use is associated with health status (or specific health-related characteristics) of study participants.

CEFALO



Source: Photocase

Multinational case-control study about mobile phone use and brain tumour risk among children and adolescents aged 7–19 years.



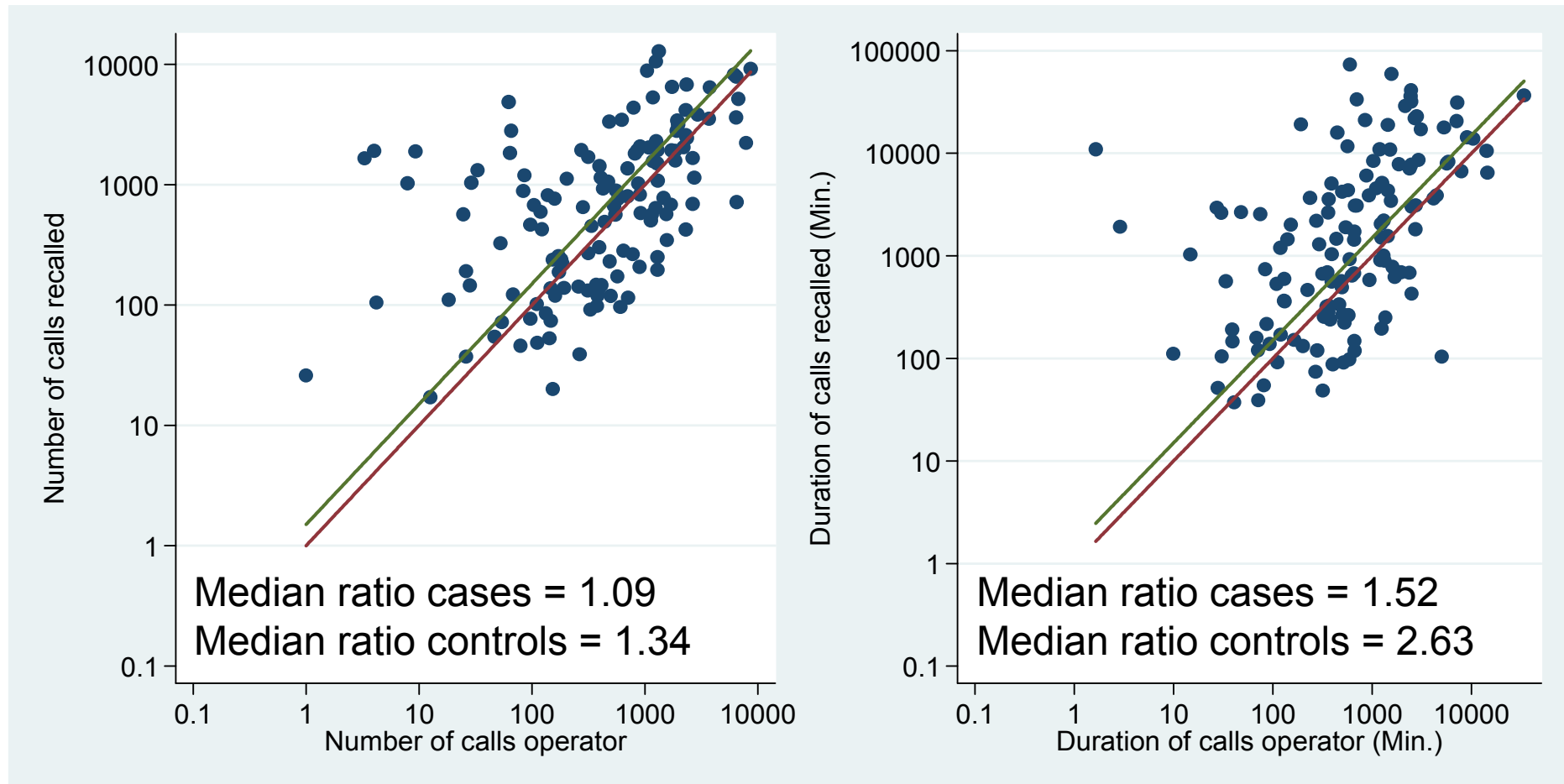
CEFALO

- Study period: 2004–2008
- Detailed questionnaire about mobile phone use.
- Consent to get network operator data
- Operator data:
 - Sweden & Denmark (59/39% cases, 91/33% controls)
 - Number of calls, duration of calls, subscription start and end dates.

Methods

- Ratio = recalled/operator-recorded
- Ratio > 1: Overestimation
- Ratio < 1: Underestimation
- Research question:
 - Predictors of overestimation (i.e. ratio ≥ 1.5 , logistic regression)

Recall accuracy of children



Predictors of overestimation

Variable	Number of calls			Duration of calls		
	Overest.	Other	aOR(95%-CI)	Overest.	Other	aOR(95%-CI)
	No.	No.		No.	No.	
Country						
Denmark	13	36	1.0	31	18	1.0
Sweden	41	44	1.77 (0.71-4.40)	46	39	0.47 (0.18-1.21)
Health status						
Case	17	31	1.0	24	24	1.0
Control	37	49	1.16 (0.52-2.57)	53	33	1.83 (0.83-4.06)
Age group						
7-14	24	46	1.0	33	36	1.0
15-19	30	34	2.34 (1.03-5.32)	44	21	3.13 (1.36-7.18)
Gender						
Male	22	37	1.0	28	30	1.0
Female	32	43	1.09 (0.50-2.38)	49	27	2.67 (1.18-6.01)
SES of parents						
Low	14	12	1.0	15	10	1.0
Intermediate	43	23	0.92 (0.32-2.65)	39	27	0.73 (0.24-2.19)
High	23	19	1.16 (0.38-3.50)	23	20	0.68 (0.22-2.14)
Time between reference and interview date						
< 1.5 years	52	36	1.0	44	44	1.0
≥ 1.5 years	28	18	0.77 (0.31-1.86)	33	13	1.62 (0.66-3.96)
Amount of phone use (operator recorded)						
Low	26	16	1.0	30	12	1.0
Medium	15	30	0.31 (0.12-0.79)	25	20	0.54 (0.20-1.44)
High	13	34	0.21 (0.08-0.56)	22	25	0.27 (0.10-0.78)

Strengths & Limitations

- + First study that used objective operator data.
- Only operator data from Denmark and Sweden, no data from Switzerland and Norway.
- Transferability to other countries?
- Amount of use representative nowadays?

Summary

- Children and adolescents rather overestimate cumulative number and duration of calls.
- Age, possibly gender and actual amount of mobile phone use are predictors of overestimation.

Conclusions

- No association between health status and risk of overestimation but health-relevant factors.
- *Don't*: Use only self-reported mobile phone use.
- *Do*: Use objective exposure data.
- Self-reported use only in prospective studies, adjustment needed to prevent confounding.

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