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APPENDIX 1

The potential for bias in estimation of ORs: a worked example

Consider the example of diabetes and the effect of unemployment status, with the following input assumptions….

- The true OR we seek to estimate (odds of occupational injury in those with diabetes versus those without)=2.0
- The RR of diabetes in employed versus unemployed men=3.0
- The estimate of prevalence of diabetes in our controls (y)=1.59%[9]
- We planned to study 1700 cases and 8500 controls….

RR	Prevalence (%) among controls in our sample (y)	Prevalence (%) in workers (solve for 'p')	Expected OR (vs 2.0)
Diabetes			
3.00	1.59=(0.921×p)+(0.079×3p)	1.373%	1.72

The extract from table 1 (above) shows that the estimated prevalence of diabetes in working controls (p) is 1.373%, and that the OR of 2.0 can be expected to be biased downwards to 1.72. This last figure is derived as follows:

If all the controls were workers, 1.373% of 8500 that is 116.705 (without rounding) would be diabetics and the remainder (8383.295) would not.

In fact, as our controls include some unemployed men, and as a whole have a prevalence of 1.59%, we estimate in error that 135.15 controls would have diabetes and 8364.85 would not.

Imagine first the 'true' 2×2 table, confined to workers, among whom the true OR for injury is 2.

Worker controls			
	Diabetes?		
Injury?	Yes	No	All
Yes	A	(1700−A)	1700
No	116.705	8383.295	8500

This table has one unknown, but OR=2. Thus, (8383.295×A)/(116.705×(1700−A))=2.

Solving for 'A' gives a value of 46.05:

Worker controls			
	Diabetes?		
Injury?	Yes	No	All
Yes	46.05	1653.95	1700
No	116.705	8383.295	8500

Using 'all' controls rather than 'worker' controls will alter the bottom row of this table as follows:

All controls			
	Diabetes?		
Injury?	Yes	No	All
Yes	46.05	1653.95	1700
No	135.15	8364.85	8500

Thus, instead of an OR of 2, the estimated OR would become: (46.05×8364.85)/(135.15×1653.95)=1.723.

Corrections

NO2 and children' s respiratory symptoms in the PATY study. **Pattenden S,** Hoek G, Braun-Fahrlander C *et al Occup Environ Med* 2006;**63**:828–835. This article was published with an incorrect doi of 10.1136/oem.2006.025213. The correct doi is 10.1136/oem.2005.025213.

Occup Environ Med 2010:**67**:877. doi:10.1136/oem.2005.025213

Valentini E, Ferrara M, Prasaghi F *et al*. Systematic review and meta-analysis of psychomotor effects of mobile phone electromagnetic fields. *Occup Environ Med* 2010;**67**:708–716. The citation in this review contains an error. The fourth author is De Gennaro L, not Gennaro LD.

Occup Environ Med 2010:**67**:877. doi:10.1136/oem.2009.047027corr1

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