Power of genetic epidemiology study

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GE02 day 4 part 4

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Power of the test that p ≠ ½

- Some anticipated p

$$\frac{|\, np - \frac{n}{2} \,|}{\sqrt{np(1-p)}} \geq Z_\alpha + Z_\beta$$

$$(Z_\alpha + Z_\beta)\sqrt{p(1-p)}\sqrt{n} - pn = -\frac{n}{2}$$

$$\mathrm{A}\ \sqrt{n} - \mathrm{B}\ n = -\mathrm{C}$$

(see solution in Normal approximation)

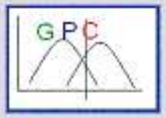
- For α =0.05 and power = 1 – β = 80%
  - $Z_\alpha = 1.96$, $Z_\beta = 0.84$

Other tests

- P(Mut in cases) ≠ P(Mut in controls), etc.
- Can be obtained in similar way

Genetic power calculator

http://pngu.mgh.harvard.edu/~purcell/gpc/



Genetic Power Calculator

S. Purcell & P. Sham, 2001-2005

This site provides automated power analysis for variance components (VC) quantitative trait locis (QTL) linkage and association tests in sibships, and other common tests. It is currently under construction - suggestions, comments to *Shaun Purcell*. If you use this site, please reference the following Bioinformatics :

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Purcell S, Cherny SS, Sham PC. (2003) Genetic Power Calculator:
design of linkage and association genetic mapping studies of complex
traits. Bioinformatics, 19(1):149-150.
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Modules

VC QTL linkage for sibships	Notes
VC QTL association for sibships	Notes
VC QTL linkage for sibships conditional on trait	Notes
MPIC: Multipoint Polymorphism Information Content	Notes
TDT for discrete traits	Notes
Case-control for discrete traits	Notes
TDT for threshold-selected quantitative traits	Notes
Case-control for threshold-selected quantitative traits	Notes
Probability Function Calculator	Notes