

Heritability, methods and importance of its assessment in medicine

Heritability

- Heritability is defined as the proportion of the total phenotypic variance of a condition that is caused by additive genetic variance.
- Often described as h^2 .
- Expressed as either proportion of 1 or percentage.
- The greater the heritability of a condition or trait, the greater is the value of genetic factors in said trait.

Methods

- Can be calculated as correlation coefficient, using statistics of normal distribution.
- Also can be calculated data on the concordance in monozygotic and dizygotic twins.
- *Phenotypic variance*
 - Represented by V_p .
 - Components of the phenotypic variance :
 - V_g - genetic variance.
 - V_e - environmental variance.
 - V_{ge} - genetic environmental interaction variance. $V_p = V_g + V_e + V_{ge}$
 - *V_g components :*
 - V_a - additive genetic variance.
 - V_d - dominance genetic variance.
 - V_i - genic interaction variance. $V_g = V_a + V_d + V_i$
- *Summary equation* **$V_p = V_a + V_d + V_i + V_e + V_{ge}$**
- This equation provides us with a model that describes the potential causes of differences that are observed among individual phenotypes.

Importance of assessment in medicine

- In practice, it is desirable to derive heritability estimates using different types of relatives, both that live in the same environment and not.
- This is important to make sure no environmental factors cloud the result.