Tests for the Odds Ratio in a Matched Case-Control Design with a Quantitative X

Numeric Results
Hypothesis Type: Two-Sided

Power	Number of Matched Sets N	Cases per Set M_D	Controls per Set M_H	Odds Ratio OR	Standard Deviation of the Covariate X σ_x	Regression of X on other Covariates R^2	Alpha
0.8000	24	1	3	1.0060	114.8000	0.0740	0.0500
0.8000	24	1	4	1.0058	114.8000	0.0740	0.0500

References

Lachin, John M. 2008. 'Sample size evaluaion for a multiply matched case-control study using the score test from a conditional logistic (discrete Cox PH) regression model.' Statistics in Medicine, Volume 27, Pages 2509-2523.
Lachin, John M. 2011. Biostatistical Methods: The Assessment of Relative Risks, Second Edition. John Wiley & Sons. New York.
Tang, Yongqiang. 2009. 'Comments on 'Sample size evaluation for multiply matched case-control study using the score test from a conditional logistic (discrete Cox PH) regression model.'' Statistics in Medicine, Volume 28, Pages 175-177.

Report Definitions
Power is the probability of rejecting a false null hypothesis.
Number of Matched Sets, N, is the number of sets (strata) in the study. Each set consists in a fixed number of cases and controls.
Cases per Set, M_D, is the number cases in each matched set.
Controls per Set, M_H, is the number of controls in each matched set.
Odds Ratio, OR, is the ratio of the odds of a positive outcome when the covariate is X+1 to the odds of a positive outcome when the covariate is X.
Standard Deviation of the Covariate X, σ_x, is the average SD of X across all subjects in the study.
Regression of X on other Covariates, R^2, is the R^2 that occurs when the covariate variable of interest X is regressed on any other covariates. This adjustment assumes that covariates that have a large correlation with the outcome are used in the matching process and are not included here.
Alpha is the probability of rejecting a true null hypothesis of no association between disease and the exposure variable.

Summary Statements
In a matched case-control study, a sample of 24 matched sets (or strata) is obtained. Each matched set consists of 1 case and 3 controls. The standard deviation of X is 114.8000. This sample achieves 80% power to detect an odds ratio of 1.0060 calculated using conditional logistic regression with a 0.0500 significance level.

Dropout-Inflated Sample Size

Dropout Rate	Sample Size N	Dropout-Inflated Enrollment Sample Size N'	Expected Number of Dropouts D
20%	24	30	6

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Definitions
Dropout Rate (DR) is the percentage of subjects (or items) that are expected to be lost at random during the
 course of the study and for whom no response data will be collected (i.e. will be treated as "missing").
N is the evaluable sample size at which power is computed (as entered by the user). If N subjects are
  evaluated out of the N' subjects that are enrolled in the study, the design will achieve the stated power.
N' is the total number of subjects that should be enrolled in the study in order to end up with N evaluable
  subjects, based on the assumed dropout rate. N' is calculated by inflating N using the formula N' = N / (1
  - DR), with N' always rounded up. (See Julious, S.A. (2010) pages 52-53, or Chow, S.C., Shao, J., and Wang,
  H. (2008) pages 39-40.)
D is the expected number of dropouts. D = N' - N.

Chart Section

OR vs M_H

Power=0.80 N=24 M_D=1 Alpha=0.05 P_E=114.80 R^2=0.07 M.C.C. Test
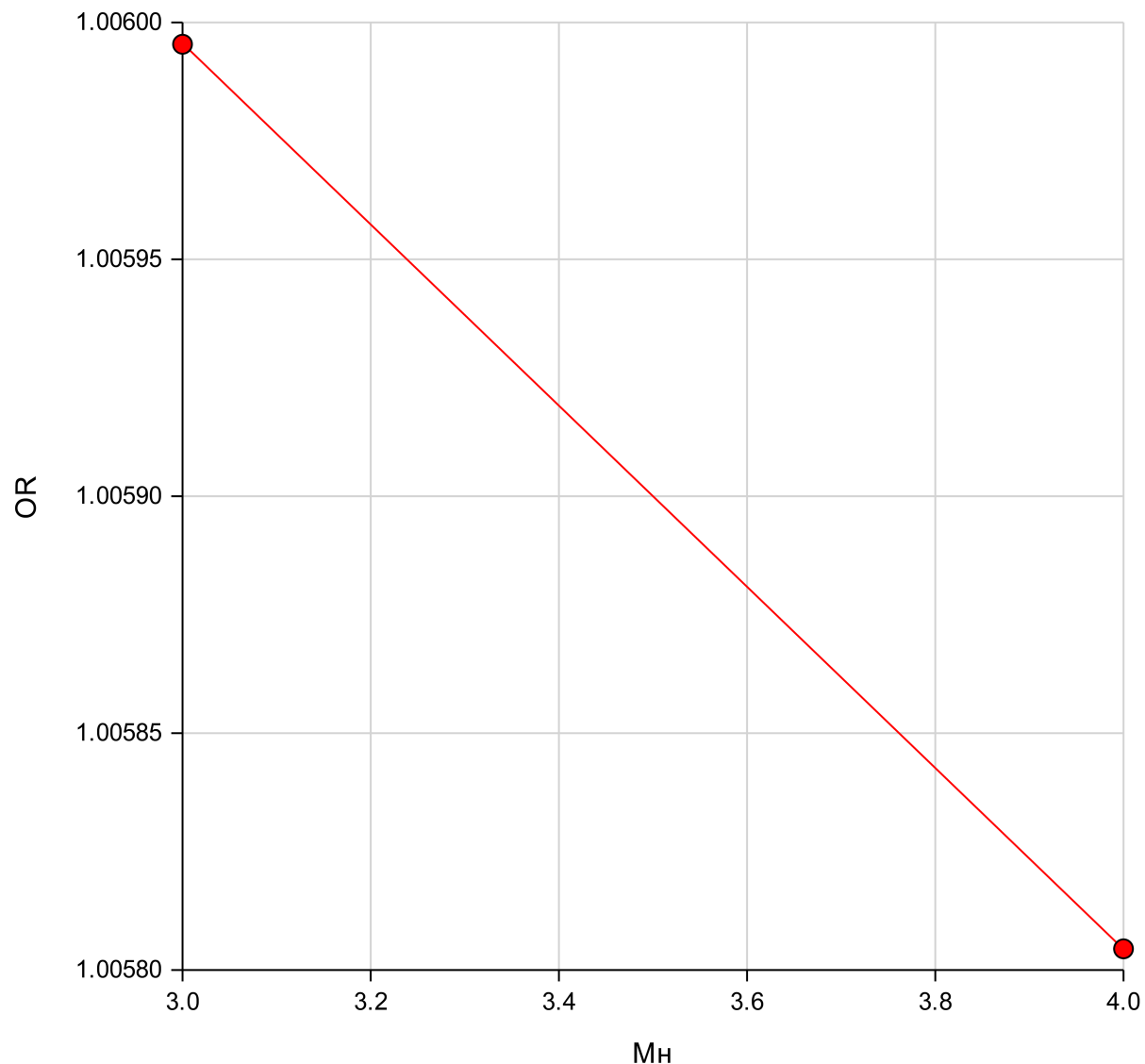
Tests for the Odds Ratio in a Matched Case-Control Design with a Quantitative X

Procedure Input Settings
Autosave Inactive

Design Tab
Solve For:	Odds Ratio
Alternative Hypothesis:	Two-Sided
Power:	0.8
Alpha:	0.05
N (Number of Sets or Strata):	24
M_D (Number of Cases per Set):	1
M_H (Number of Controls per Set):	3 4
σ_x (Standard Deviation of X):	114.8
R^2 (X vs. Covariates):	0.074