M.Sc. in Evidence Based Practice

Module: Clinical Biostatistics

Examination, Wednesday 21st June 2006

You have two hours for this examination. You will be given the published papers used in it one week before the examination. The examination is open book and you will be allowed to bring any books or notes you wish into the examination.

Answer all questions. Each question carries equal marks.

Questions 1 and 2 are about the paper *Use of a dummy (pacifier) during sleep and risk of sudden infant death syndrome (SIDS): population based case-control study.*

1. In the Abstract, the authors say that 'The adjusted odds ratio for SIDS associated with using a dummy during the last sleep was 0.08 (95% confidence interval 0.03 to 0.21)'. What is an odds ratio and how can it be interpreted in this study?
2. What is meant by '95% confidence interval 0.03 to 0.21' and what can we conclude from it?

Questions 3 to 6 are about the paper *School dinners and markers of cardiovascular health and type 2 diabetes in 13-16 year olds: cross sectional study.*

3. In the Table, the symbol '§' is used to indicate 'P<0.05'. What does 'P<0.05' mean? What can we conclude about this for glucose?
4. What is the relationship between the P values and the confidence intervals in the Table?
5. In the Table, the means and mean differences are adjusted for age, sex, town, ethnicity, and school. What does 'adjusted' mean and what method would be used to do this? What assumptions about the data would be required?
6. For folate, we are given geometric means and percentage differences. What is a geometric mean and why might the authors have used this method? Why are percentage differences given for folate, rather than the difference in μmol/l? Why is no standard deviation given for folate?

Questions 7 to 12 are about the paper *Randomised controlled trial of home based motivational interviewing by midwives to help pregnant smokers quit or cut down.*

7. In Table 3, for the combined estimate of smoking cessation, we are given four relative risks. What is a relative risk? How might these be interpreted here?
8. In Table 3, for the combined estimate of smoking cessation, there are two chi-squared tests: χ^2 for trend 0.93, P=0.34, χ^2 non-linear 9.08, P=0.01 (2 df). What is the chi-squared test for trend and what can we conclude from it? What is the non-linear term and what can we conclude?
9. The authors report that these results were unchanged after logistic regression was used to adjust for age, level of deprivation, living with a partner, having previous children, smoking level before pregnancy, and cutting down before enrolment. What is logistic regression and what does 'adjustment' mean? Why might it be done in a randomised trial?
10. In Table 4, we are given means and standard deviations for serum cotinine. What could we conclude about the distribution of serum cotinine and why?
11. What method could be used to calculate the 95% confidence intervals for the difference in mean cotinine? What assumptions would be required and do you think that these data would meet them?
12. What could we conclude from the confidence interval for the difference in mean cotinine at enrolment?