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**Re: "Parental occupation and birth outcome in an agricultural community" by DA Schwartz, LA Newsum, R Markowitz Heifetz, *Scand J Work Environ Health* 12 (1986) 51-54**

by [Hexter AC](#), [Harris JA](#)

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Refers to the following text of the Journal: [1986;12\(1\):51-54](#)

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**Re: "Parental occupation and birth outcome in an agricultural community" by DA Schwartz, LA Newsum, R Markowitz Heifetz, *Scand J Work Environ Health* 12 (1986) 51—54**

In their article "Parental occupation and birth outcome in an agricultural community" [*Scand J Work Environ Health* 12 (1986) 51—54], Schwartz et al found an increased risk in limb reduction defects among children of agricultural workers in a comparison with nonagricultural workers in Imperial County, California. They discussed various possibilities for this finding, for example, exposure to pesticides.

Their conclusions were based on five cases among 986 births to agricultural workers (rate of 5.07/1 000 live births), compared to three cases among 1 354 births to nonagricultural workers (rate of 2.22/1 000 live births). A standard statistical analysis using Fisher's "exact" test gives a (one-sided) P-value of 0.21 (1). A less conservative test (Miettinen's modification) gives a (one-sided) P-value of 0.14 (2). The 95 % confidence interval around the reported rate ratio of 2.3 is 0.61—8.65 (3). Thus the results of this study are far short of the usual statistical criteria for considering the results worthy of any explanation other than chance.

*References*

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**Authors' reply**

We appreciate the concerns raised by Drs Hexter and Harris; however, we arrive at different conclusions and thus welcome the opportunity to respond.

The purpose in reporting our findings (3) was to alert the medical community to two related epidemiologic observations. First, we found that the prevalence of limb reduction defects within our agricultural community was 3.2/1 000 live births while the Birth Defect Monitoring Program reported United States rates of limb reduction defects to be 0.36/1 000 total births for the year 1979 (1) and the Collaborative Perinatal Project observed a rate of 1.65/1 000 total births (2). Therefore, a two- to ninefold excess was observed when

the prevalence of limb reduction defects within our study population was compared to available United States rates. Second, within our study population, agricultural workers appeared more likely to have children with limb reduction defects than nonagricultural workers (risk ratio 2.3). The purpose in this secondary comparison was to explore the possibility of a dose-response effect (ie, even though the entire community was exposed to agricultural chemicals, agricultural workers would be exposed to higher concentrations).

Although some might argue that statistical tests should stand as the final arbitrator of any investigation, we would assert that there are appropriate settings to judiciously apply and withhold statistical reasoning. The design of our study was cross-sectional and therefore is best viewed as a hypothesis-generating investigation. Moreover, the infrequent occurrence of adverse birth outcomes and the small size of our study population (N = 2 463) severely limited the power within our analysis. Given these concerns, we felt that reporting point estimates (risk ratios) would help to generate hypotheses that could be investigated in future studies.

Our results are therefore best interpreted as an epidemiologic case report. Much like a clinical case report, we have attempted to draw attention to an area that we feel is in need of further investigation. In fact, we are currently involved in a case-referent study examining the association between parental involvement in agricultural work and the occurrence of congenital limb reduction defects.

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