

A META-ANALYSIS OF VITAMIN A SUPPLEMENTATION IN INFECTIOUS DISEASES OF CHILDHOOD

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In 1986, Sommer et al. (1986) reported that all cause mortality could be reduced by one-third in young Indonesian children given high-dose supplements of vitamin A. Although a number of subsequent studies concurred with this result, one found no such effect (Vijayaraghavan et al. 1990). We conducted a meta-analysis to investigate this question using Medline and the reference lists of papers discussing the issue to locate studies. The Methods sections of papers describing trials were extracted and all reference to the location and results of the study were deleted by a research assistant. These extracts were then reviewed blind using pre-defined criteria. Several papers were published after the initial review and were judged by the same criteria. Only 12 of the 18 identified studies met the criteria of being randomised, having good follow-up of the subjects and providing data to permit an intention-to-treat analysis and were included in this meta-analysis. These included six community trials and three trials in children admitted to hospital with complications of measles in less developed countries and three trials in Very Low Birthweight infants conducted in the USA and Greece. We calculated odds ratios (OR) for all-cause and cause-specific mortality and examined morbidity descriptors in the three groups of studies.

The six community studies involved more than 94,000 children. Vitamin A supplementation was associated with a statistically significant 30% reduction in all cause mortality (OR=0.70, 95% CI:0.62-0.79), and ORs of 0.61, 1.12 and 0.45 for mortality from diarrhoea, respiratory disease and measles respectively. In the measles trials, involving nearly 400 children, the effect was even stronger - the ORs were 0.36, 0.33 and 0.30 for all-cause, diarrhoea-specific and respiratory disease specific mortality respectively. In 124 VLBW infants, those who received vitamin A injections had a lower all cause mortality (OR=0.80, 95%CI:0.31-2.0).

Morbidity data were reported in such a diverse number of ways that it was not possible to summarise it for the study types. Some, but not all, studies reported statistically significant reductions in the incidence of respiratory disease, duration of diarrhoea and respiratory disease and the length of stay in hospital or neonatal intensive care units.

These studies show that vitamin A supplementation leads to a substantial reduction in mortality in children living in the community and in those hospitalised with measles in less developed countries. It would seem that the effect is mediated via a decrease in the severity and duration of the diseases rather than via a reduction in the incidence of the diseases.

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