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Incorrect and Misleading Claims Regarding Vitamin D

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In Response to Article Entitled:
'Optimisation of Vitamin D Status for Enhanced Immuno-Protection against Covid-19' by D.M McCartney et al – Ir Med J; Vol 113; No. 4; P58

McCartney and Byrne claim[1] we misrepresented the findings of Martineau[2] in our BMJ editorial.[3] They are wrong. The absolute risk reduction is the difference between the absolute risks in the control and intervention groups. In the meta-analysis by Martineau[2] this is 42%-40% = 2%. McCartney and Byrne divide this figure by the baseline absolute risk to get 4.8%, which is the relative risk reduction.

Unfortunately, they compound their error by equating an odds ratio of 0.88 with a 12% reduction in risk. The odds ratio only approximates the relative risk when the absolute risk is small. In the Martineau meta-analysis,[2] the absolute risk (42%) was not small, and thus the odds ratio substantially overestimates the relative risk.[4] The relative risk was actually about 0.93,[4] fairly close to the estimate of 4.8% by McCartney and Byrne.[1]

McCartney and Byrne then suggest that a 70% reduction in risk in those with baseline 25OHD <25 nmol/L from the Martineau meta-analysis could apply to Irish nursing home residents.[1] Notwithstanding the fact that they mean a 70% reduction in the odds (the relative risk reduction is about 48%), this finding is not generalizable. In the subgroup analysis McCartney and Byrne quote, there are 234 individuals with baseline 25OHD <25 nmol/L treated with daily or weekly vitamin D.[2] However, Table 1 shows that 225/243 individuals treated with daily/weekly vitamin D and 25OHD <25 nmol/L were infants or children (or all but 18).[2]

192/225 children were from a single study in school children in Mongolia which showed an extremely positive effect of 7 weeks of milk fortified with vitamin D compared to milk alone on parent-reported chest infections or colds occurring within the previous 3 months.[5] These results should be interpreted with extreme caution. The trial was cluster randomized by classroom with an undescribed (but small) number of clusters per treatment arm. In the Martineau meta-analysis, the study appears to have been analyzed as though children were individually randomized.[2] The data on colds or chest infections were not collected prospectively, instead gathered from parental recall for the preceding 3 months, of which the children were not taking vitamin D for 6 weeks.[5] The analysis was post-hoc and data for only 1 of the 5 different vitamin D arms have been reported.[5]

The claim that vitamin D supplementation prevents respiratory tract infections in the Martineau analysis, overall or in subgroups with 25OHD <25nmol/L, is largely or entirely dependent on this study. Applying fragile, post-hoc, selectively reported results from a cluster randomized trial of school children in Mongolia (or meta-analyses dependent on it) to Irish nursing home residents is both misleading and unwise.

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