In general, the interactions of micronutrients, especially iron and zinc, are believed to involve both preabsorptive (divalent metal transporter 1) and postabsorptive (ferritin, transferrin, and cytosolic aconitase) stages. Accumulating evidence suggests that these interactions can sometimes be beneficial rather than deleterious. For example, zinc can act as an antioxidant and prevent peroxidative damage during oral repletion of iron, either by induction of metallothionein or by stabilization of cell membranes (4). Therefore, investigations should examine the pros and cons of trace element interactions, which may provide information relevant to nutritional prophylaxis programs.

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**REFERENCES**


**Reply to FT Wieringa et al**

Dear Sir:

In their letter, Wieringa et al raise questions concerning definitions of anemia, iron deficiency, zinc deficiency, and iron deficiency anemia (IDA) used in articles by Dijkhuizen et al (1) and us (2) and whether iron and zinc supplementation in combination is most important. Because of the negative functional consequences, we believe that our conclusion that combined iron and zinc supplementation administered in the studies by both Dijkhuizen et al (1) and us (2) cannot be routinely recommended remains valid. However, both iron deficiency and zinc deficiency remain important public health problems in low-income settings, and finding solutions to improve iron and zinc nutrition in vulnerable groups, such as infants, children, and pregnant women, remains imperative.

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Does waist circumference alone explain obesity-related health risk?

Dear Sir:

In an editorial related to an article by Janssen et al (1), Bray recommended that we be reluctant toward replacing body mass index (BMI; in kg/m²) with waist circumference as the only clinical measurement for indicating health risks associated with overweight and obesity (2). We agree with Bray. In their article, Janssen et al (1) called for prospective studies. We published such a paper last summer (3). Our results support both the hypotheses of Janssen et al and Bray’s reluctance toward ignoring BMI.

Between 1993 and 1997, 57,053 men and women aged 50–64 y were recruited for a Danish prospective study, the Diet, Cancer, and Health study. The cohort represented 7% of the entire Danish population in this age group. From recruitment until 31 December 2002, 2323 deaths (1461 men and 862 women) were identified in the Civil Registration System by using the unique personal identification numbers assigned to all Danish inhabitants. Missing information about variables of interest led to the exclusion of 628 participants, and 4 were lost to follow-up.

We examined the independent associations of waist circumference and BMI with all-cause mortality in this cohort of middle-aged men and women (3). We showed how BMI predicted mortality for given values of waist circumference and how waist circumference predicted mortality for given values of BMI (3). No sign of interaction was found (3). Our findings are summarized in the 2 new figures presented here, which show the estimated associations for each of the obesity measures for fixed values of the other measure. The estimated association with mortality is displayed for a 95% normal range of variation in the obesity measure among subjects with a fixed value of the other measure (eg, for waist circumference = 130 cm, the 95% prediction limits for BMI were 35.7–44.3 for men and 38.8–53.4 for women). As shown in Figure 1, the estimated mortality rate ratio decreased with increasing BMI for all values of waist circumference between 60 and 130 cm in women and between 70 and 140 cm in men. The decrease in mortality was strongest for the lowest BMI values. The general increase in mortality with BMI among obese subjects seems to be caused by the fact that high BMI values are observed for subjects with a high waist circumference only, which can be seen from the horizontal extent of the waist circumference–specific curves. As shown in Figure 2, the estimated mortality rate increased log-linearly with waist circumference for BMI values between 17 and 40 in both men and women. Furthermore, increasing mortality with increasing waist circumference was found even for BMI values < 25 (3).

Thus, the importance of BMI for mortality depends on the World Health Organization’s classifications of BMI (4). For overweight