News in Brief

HIGH FOLATE INTAKE BY MEN MIGHT REDUCE RISK OF BIRTH DEFECTS INTHEIR CHILDREN

Researchers from the University of California at Berkeley recommended that men, who are considering fathering a child, should perhaps take multi-vitamins and eat plenty of leafy green vegetables. While it is known that a man's diet affects sperm count and motility, the study suggests that paternal diet can affect the offspring's health.

Relative to the recommended folate intake of 400 µg a day for women, the study found a benefit with men who consumed more than 700 µg of folate a day, 1.8 times the recommended dietary allowance (RDA).

Sperm samples from 89 non-smoking healthy men, who were employed or retired from a university research laboratory, were studied. The men were aged from 20 to over 70 years, predominantly white, and well-educated. Based on a validated food frequency questionnaire, 57% used vitamin supplements (median daily intake – folate 475 µg, vitamin C 162 milligram (mg), vitamin E 23.7 mg, beta-carotene 2,586 µg and zinc 12.3 mg).

Spermatozoa were tested for aneuploidy on chromosomes X, Y and 21, using fluorescent in situ hybridisation. The errors tested for were XY sperm (causing Klinefelter's syndrome), disomy X (causing triple X syndrome), disomy Y (causing XYY syndrome), sex nullisomy (causing Turner syndrome), and disomy 21 (causing Down's syndrome).

Overall aneuploidy in spermatozoa decreased with increasing daily folate intake among the studied men ($P = 0.04$). The abnormalities were 19% lower (45.6 versus 56.0 per 10,000 sperm, $P = 0.01$) for men with high folate intake (722 to 1,150 µg) compared with moderate intake (343 to 683 µg intake). Aneuploidy was 20% lower overall (45.6 versus 57.0 per 10,000 sperm, $P = 0.02$) for high intake compared with a low intake (114 to 333 µg).

Men with high folate intake had 18% lower frequency of sperm with sex nullisomy errors than those with moderate intake ($P = 0.12$), and 26% lower frequency than those with low intake ($P = 0.04$). (Trend for lower risk with higher intake was significant, $P = 0.03$).

Men with high folate intake had 30% lower frequency of disomy X and disomy 21 than those with moderate intake ($P = 0.04$ and 0.003, respectively). The trend for lower risk with higher intake was not significant (both $P > 0.2$).

With each 100 µg increase in daily folate intake, the associated decrease in the aneuploidy frequency (after adjustment) was 3.6% for aggregate aneuploidy (95% confidence interval 0.8 to 6.3), 6.2% for disomy X ($P = 0.05$), 4.6% for disomy 21 ($P = 0.08$), 4.2% for sex nullisomy ($P = 0.06$).

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In a nutshell, each additional 100 microgram (μg) of folate intake per day was associated with an overall 3.6% lower aneuploidy in spermatozoa, and of spermatozoa carrying errors in the chromosomes X, Y, or 21. Other vitamins and minerals did not show a consistent associated with aneuploidy in multivariate analysis.

The cross-sectional study does not establish a causal relationship between increased folate and decreased spermatozoa aneuploidy; and further study is needed to sort out the contribution of diet and other supplements. Other study limitations include a relatively homogenous study population, use of a dietary questionnaire, and that a large number of the men being studied were taking diet supplements.

If further studies confirm the findings, public health intervention to increase the RDA of folate for men who wants to father children could be considered, so as to reduce the risk of chromosomal anomalies in their offspring.

(Source: Young SS, et al. The association of folate, zinc and antioxidant intake with sperm aneuploidy in healthy non-smoking men. Human Reproduction 2008; DOI: 10.1093/humrep/den036.)

NO-NONSENSE ELECTRONIC GOVERNOR MAY HELP CHILDREN FIGHT WEIGHT

An electric governor that is impervious to pleading might help to decrease children's computer and TV usage, and help overweight children shed unwanted weight. Use of the device with TV and computer monitors was associated with a modest decrease in body mass index (BMI) (P = 0.05) over two years. The effect appears to be due to decreased caloric intake rather than increased physical activity.

This paper, which was reported by researchers from the State University of New York at Buffalo, adds to evidence that restricting TV and computer use is effective in reducing weight among children at risk for obesity. The use of an electronic device might eliminate the need for constant parental vigilance, and reduce the need for disciplinary action when the child exceeds a set sedentary limit.

The study was a randomised controlled trial of 70 children aged four to seven, with BMIs ≥ 75th percentile for their age and sex, and who regularly watched TV or played computer games for at least 14 hours per week.

Each family had the monitoring device (called TV Allowance) installed on all TV and computer monitors in the house. Each family member was given a code to activate the electronic devices. 36 children had a weekly time limit for their codes, and the time limit was decreased by 10% until a 50% reduction. Children were given incentives like money and stickers if they used less of their allowed time limit. The other children in a control group had no time restriction.

After two years, TV and computer game time had fallen by an average of 17.5 hours per week in the intervention group, compared with 5.2 hours per week in the control group (P = 0.001).

There was a decrease in the age- and sex-standardised BMI in the intervention group compared with the control group. However, the decrease of BMI was modest (minus 0.24 versus minus 0.13, P = 0.02 at six months, P = 0.03 at 12 months, P = 0.05 overall).

Children in families of lower socio-economic status were most likely to benefit from the intervention, with significant decrease in standardised BMI (six months P = 0.002, 12 months P = 0.02, 18 months P = 0.04, 24 months P = 0.05). There was no significant effect on BMI among children of high socio-economic status families.

The device significantly reduced energy intake from baseline to 18 months and 24 months for the intervention group versus the control group (P = 0.047). The level of physical activity did not change between the groups, but the targeted sedentary behavior (TV and computer use) showed a significant impact on BMI change (P = 0.05).

Although the effect of the device on BMI was small, the effect of a simple and inexpensive intervention (about US$100 for each device) magnified across a large population might produce important reductions in obesity prevalence and obesity-related co-morbidity. Such a device might help parents to meet the Academy of Pediatrics recommendation of no more than two hours per day of TV and computer use time.

(Source: Epstein LH, et al. A randomised trial of the effects of reducing television viewing and computer use on body mass index in young children. Arch Pediatr Adolesc Med 2008; 162: 239-245.)

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ABDOMINAL FAT MAY INCREASE THE RISK OF DEMENTIA

According to a study by researchers with Kaiser Permanente (KP), Northern California, a paunch at middle-age might increase the risk of dementia at older age. The study analysed nearly 6,600 patients followed up for over 30 years. Central obesity fat posed a risk of dementia even in those with normal body mass index (BMI). This adds to recent population-based studies that already suggest obesity is a risk for cognitive impairment.

6,583 KP members, aged 40 to 45 years, had their sagittal abdominal diameter measured from 1964 to 1973. Medical records were searched to a diagnosis of dementia (on average, 36 years after abdominal fat assessment).

There were 1,049 (15.9%) members who had a diagnosis of dementia. With abdominal diameter stratification, those in the top quintile had a 2.72 relative risk of dementia, compared with those in the bottom quintile (95% CI 2.33 to 3.33). Compared with those in the bottom quintile, the risk of dementia was 20% greater in the 2nd quintile, 49% greater in the 3rd and 67% greater in the 4th.

After accounting for BMI, those in the top quintile had a two-fold increased risk of dementia compared with those in the lowest quintile (HR 1.92, 95% CI 1.58 to 2.35). Those with a sagittal abdominal diameter ≥25 cm and a normal BMI had twice the dementia risk of those with less abdominal fat and normal BMI (HR 1.89, 95% CI 0.98 to 3.81). Those with a sagittal abdominal diameter ≥25 and a BMI > 30 had a dementia risk 3.6 times greater than those with less abdominal fat and normal BMI (95% CI 2.85 to 4.55).

The study limitations included: (a) there were no information on dieting, nutrition or cognitive function; (b) there was no direct distinguishing between visceral and subcutaneous fat (CT and MRI imaging technology were not available in the 1960s); and (c) the study only looked at those who were alive in 1994 (onset of dementia ascertainment), and thus those who did not survive to older age were excluded. ■

(Source: Whitmer RA, et al. Central obesity and increased risk of dementia more than three decades later. Neurology 2008; doi:10.1212/01.wnl.0000306313.89165.ef.)