

Mental health

Consumption of nitrate-cured meat products increases odds of mania

There is a strong and independent association between manic episodes and a history of eating nitrate-cured meat products, a US study has found.

Patients aged 18-65 years with a diagnosis of mania were recruited from inpatient and day hospital programmes at a large psychiatric hospital in Baltimore between 2007 and 2017. Participants with other psychiatric disorders were recruited both from the same setting and local psychiatric treatment centres. The control group, aged 20-60 years, who had no psychiatric disorders were recruited through poster advertisements placed in local healthcare facilities and universities.

Participants completed a food questionnaire which asked whether they had ever consumed certain types of food, namely cured meat, undercooked meat, raw meat, undercooked fish and raw fish.

There were 217 participants with mania, 91 with bipolar depression, 79 with major depression, 371 with schizophrenia and 343 controls. Results were adjusted for a number of sociodemographic factors and health behaviours.

Compared with the control group, participants with a diagnosis of mania had more than three times the odds of ever having eaten cured meat; adjusted odds ratio (OR) 3.49 (95% CI: 2.24-5.45). After adjustment for multiple comparisons, there were no significant associations between mania and the consumption of other food types. Lower odds of association

were found between other psychiatric diagnoses and consumption of cured meat.

Observational studies cannot determine the direction of causation. Therefore, in the second part of the study, the investigators studied the effects of adding nitrates to rat diets. After a two-week period of dietary supplementation, rats were found to exhibit mania-like hyperactivity when compared with rats who had received a normal diet. Rat hyperactivity was associated both with changes in hippocampal pathways which have been implicated in human bipolar disorder, and alterations in intestinal bacterial flora.

The results are likely to have been affected by control group selection bias, patient recall bias and residual confounding, although the authors claim this is unlikely in view of the negative results for other food types. It would have been better to have used a food frequency questionnaire to investigate whether there is a dose-response relationship. Animal studies that focus on simple behaviours may have only limited validity as models of the complex condition of mania.¹ However, a causal link between nitrate consumption and bipolar disorder, mediated by increased levels of nitric oxide, is plausible.

Sodium nitrate is added to processed meats such as bacon, ham and salami as a preservative. The authors conclude that: 'While further investigations are warranted, individuals at risk for mania may consider limiting ingestion of added dietary nitrates.'

For those of us who might worry about the possible risk associated with bacon-wrapped chipolata consumption during the festive season, the authors provide reassurance that 'occasional cured meat consumption is unlikely to spur a manic episode in most of the population.'²

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Khambadkone SG, Corder ZA, Dickerson F et al. Nitrated meat products are associated with mania in humans and altered behaviour and brain gene expression in rats. *Molecular Psychiatry* 2018;doi/org/10.1038

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Sexual health

Orgasm induced by non sexual behaviour

Orgasm may be a neuropsychological process associated with diverse forms of stimulation, according to the findings of a study published in the *International Journal of Sexual Health*.

The investigators analysed comments from 919 individuals who responded to an anonymous post in 2013 on the website PostSecret.com. The individual, unknown to the research team, described having an orgasm during exercise. The respondents posted comments about their own experiences of non genital/non sexual orgasms.

All the comments were screened for eligibility for inclusion in a content analysis. There were 687 eligible comments out of 919 (74.8%). Most of the comments (481) did not refer to the individual's gender; there was enough information to infer the gender was female in 191, male in 14, and transgender in one case.

One of the most prevalent kinds of orgasm was exercised induced (23.7% of comments). These were possibly linked to genital pressure and/or friction during activities such as horse riding and cycling, with specific detail such as riding bikes on bumpy surfaces especially cobblestones. Others were related to core abdominal muscle engagement such as roller skating, swimming, yoga and chores such as stacking bags and mopping.

Some described orgasms induced by childhood playground games such as climbing poles and swinging from monkey bars or on swings. One wrote of a specific experience: 'First one was climbing the basketball pole in the playground where we lived. I never knew what it was, but I kept climbing the pole over and over again. A lady

yelled out the window: "I know what you are doing, I used to do that too." 'I was so embarrassed I didn't do it ever again.'

Vibratory motions probably explained some orgasms experienced in vehicles which were described by 10% of respondents, particularly on bumpy journeys; one even described an experience on a plane strapped in a tight seatbelt during turbulence.

Some people described orgasms experienced with urination (n = 33) and defecation (n = 17) or their suppression. Orgasms arose from stimulation of other body parts were described including stimulation from foot massages and breasts.

Some women described orgasms during breastfeeding and it was a relief for some to share this experience as it helped them to accept these feelings and to feel normal. In the same vein, several women described orgasms during childbirth.

Other experiences included orgasm associated with the use of recreational drugs, sleep, eating certain foods, reading (erotica, intellectual stimulation, beautiful prose or an emotional experience), auditory and visual stimulation, competition anxiety, bodily pain or discomfort including tattoos or piercings, and scratching itches or insect bites.

There has been much written about non sexual orgasm experiences but this is often limited to case reports. The study authors conclude: 'This analysis supports the idea that orgasm may be best considered a variably experienced neuropsychological process associated with diverse forms of stimulation.'

'Our study provides information about the diversity of human orgasm in ways that may inform sex education, therapy and clinical practice,' they add.

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Herbenick D, Barnhart K, Beavers K, Fortenberry D. Orgasm range and variability in humans: A content analysis. *Int J Sex Health* published online 15 Nov 2018 DOI:10.1080/19317611.2018.1491920

Paediatrics

Obesity in early childhood leads to obesity in adolescence

The vast majority of children who were obese at three years of age were overweight or obese in adolescence, a study from Germany has found.

Anonymised biometric data were collected by paediatricians from children who had been seen in both childhood and adolescence (15-18 years) attending for well child and other consultations.

Overall, 241,715 data points from 51,505 children were analysed.

Overweight was defined as a BMI 1.28-1.87 standard deviations (SD) above overall age-matched population mean BMI. Obesity was defined as a BMI 1.88-4.9 SDs above the mean.

Although just two sets of data were required for inclusion (one in childhood, one in adolescence) many children had been seen several times during childhood. This allowed calculation of BMI and allocation to underweight, normal weight, overweight and obesity at several points over the years, and a trajectory of weight and BMI change ascertained.

A retrospective analysis found that 53% of obese adolescents had been overweight (22%) or obese (31%) at age five years. The trajectory of obesity rose steadily each year in these children from age two through to adolescence. The greatest acceleration in BMI SD score occurred between ages two and six years.

The probability of overweight or obesity in adolescents was greater in those whose BMI score had accelerated during their preschool years compared with those having a stable BMI score (28.6% vs 20.0%) RR 1.43 (95% CI: 1.35-1.49). The majority

of normal weight adolescents had never been overweight.

A prospective analysis looked at how many obese children went on to become obese adolescents. This showed that almost 90% of children who were obese at age three were overweight or obese as adolescents. Only a minority were of normal weight at ages 15-19.

Children who were born large for gestational age also had consistently higher BMI scores during childhood and adolescence. Nearly half, 43.7%, compared with < 30% of normal birthweight children, went on to become overweight or obese adolescents; RR 1.55 (95% CI: 1.38-1.74, P < 0.001).

Children born to mothers who were overweight or obese also tended to have higher BMI scores in childhood and adolescence.

The majority of overweight or obese teenage children will become overweight or obese adults. The crucial time to spot individuals becoming overweight or obese would appear to be between two and six years of age.

The author of an accompanying editorial¹ states: 'The identification of a critical window for predicting childhood weight gain provides an opportunity for intervention to prevent obesity in children at risk.'

'The finding that the risk of adolescent obesity manifests by three to five years of age suggests that nutritional counselling should be considered when exaggerated weight gain persists or emerges after two years of age; it would be of value to test the efficacy of early dietary intervention in an appropriate trial.'

'Counselling could be applied pre-emptively for families in which the parents are overweight, particularly if there is a history of maternal diabetes or smoking,' he adds.

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