0.12 weeks (99% CI: -0.13 to -0.11)
- The odds of a pre-term birth (< 37 weeks) were 14% higher; adjusted odds ratio (OR) 1.14 (99% CI: 1.13-1.15)
- Birthweight was 20.2 g lighter (99% CI: -22.5 to -18.0)
- The odds for low birthweight (< 2,500 g) were 14% higher OR 1.14 (99% CI: 1.12-1.15).

The odds of a low 5-minute Apgar score (<8) were OR 1.14 (99% CI: 1.08-1.20) for children of fathers aged 55 years or over compared with the reference age group.

Although the odds ratios were significant they were all less than 1.5.

The only adverse neonatal events that had a statistically significant poorer score were assisted ventilation and admission to neonatal ICU. Again, the odds ratios, although statistically significant, were only marginally worse among the children of older fathers.

The global adjusted adverse event risks to children of fathers aged 45-54 and ≥ 55 years were 1.12 (99% CI: 1.11-1.13) and 1.24 (99% CI: 1.20-1.28) respectively.

Observational studies, such as this one can only demonstrate association never causation.

The study authors conclude: 'While it is important to note that the absolute risk of advancing paternal age on adverse perinatal conditions remains modest, our findings emphasise the need to further investigate the public health implications of increasing paternal age within the US and other countries.'

'Preconception counselling guidelines might need to change to incorporate the possibility that delaying parenthood for fathers might not be as inconsequential as previously understood,' they say.

DR CHRIS BARCLAY

Khandwala YS, Baker VL, Shaw GM et al. Association of paternal age with perinatal outcomes between 2007 and 2016 in the United States: population based cohort study. *BMJ* 2018;363:k4372

Cardiovascular disease

Sitting time linked to raised mortality risk in inactive adults

Sitting for long periods is associated with an increased risk of all cause and cardiovascular disease (CVD) mortality among the least physically active adults. However, moderate to vigorous physical activity equivalent to public health recommendations can attenuate or effectively eliminate such associations, a study from Australia has found.

The investigators carried out a longitudinal analysis of data from the 45 and Up Study, a prospective cohort study involving 267,119 men and women aged 45 or older in the Australian state of New South Wales. Participants completed a baseline questionnaire that included questions on time spent sitting, standing and sleeping and levels of physical activity.

The study examined the association of sitting and moderate to vigorous intensity physical activity with all cause and CVD mortality.

Data were analysed on 149,077 participants. Median follow-up for all cause mortality was 8.9 years during which time there were 8,689 deaths in total. There were 1,644 deaths caused by CVD over a median follow-up of 7.4 years.

Daily sitting time categorisation was: <4, 4 to < 6, 6 to 8, and > 8 hours. Weekly moderate to vigorous physical activity was categorised into no physical activity (inactive), 1 to 149 min (insufficiently active), 150 to 299 min (sufficently active at the lower Australian physical activity recommendations limit), 300 to 419 min (sufficiently active at the upper limit), and ≥ 420 min (highly active).

Associations between sitting and both all cause mortality and CVD mortality risk were largely limited to the two least physically active groups.

Across groups that met any physical activity recommendation, only sitting for > 8 hours/day and meeting the lower activity recommendation was associated with increased risk of all cause mortality; HR = 1.27 (95% CI: 1.08-1.50).

For CVD mortality, there was a dose response with longer sitting and lower moderate to vigorous physical activity among the inactive and insufficiently active groups.

Adherence to the lower physical activity limit (150 to 299 min/week) largely offset the increased risk of sitting except in those who reported very long sitting time, while adherence to the upper limit of at least 300 min/week eliminated the associations.

The authors concluded that sitting is associated with all cause and CVD mortality risk among the least physically active adults. Moderate to vigorous physical activity levels equivalent to meeting the current recommendations attenuate or effectively eliminate such associations.

They state: 'Higher amounts of physical activity effectively eliminated the association of sitting time with all cause mortality and CVD mortality risk.

'Reduction of sitting time is an important strategy, ancillary to increasing physical activity, for preventing cardiovascular disease and premature mortality in physically inactive populations.'

Our increasingly sedentary lifestyles are leading us down the path of premature mortality. This research provides a clear and potent message that targeting our least active patients to get out and exercise for just a few hours a week can have significant health benefits.

DR PETER SAVILL

Stamatakis E, Gale J, Bauman A et al. Sitting time, physical activity, and risk of mortality in adults. *J Am Coll Cardiol* 2019;73(16):2062-72

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