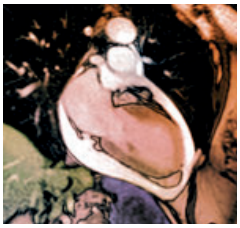
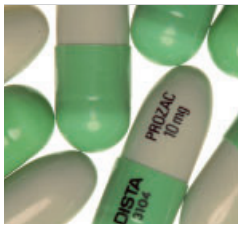
research

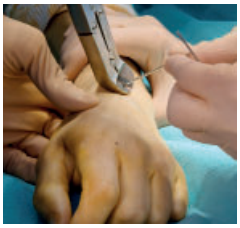
Body weight, waist, and body fat measures and risk of type 2 diabetes p 101



mRNA-1273 vaccine and risk of myocarditis or myopericarditis p 102



Remission rates and adverse events of drugs for panic disorder p 103



Surgical treatment for distal radius fracture p 104

ORIGINAL RESEARCH Systematic review and dose-response meta-analysis

Anthropometric and adiposity indicators and risk of type 2 diabetes

Jayedi A, Soltani S, Motlagh S Z-t, et al

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Find this at doi: 10.1136/bmj-2021-067516

Study question What is the association between measures of body weight, waist, and body fat, and different ratios of these measures, and the risk of type 2 diabetes?

Methods PubMed, Scopus, and Web of Science were searched to 1 May 2021 for cohort studies on the association between general or central adiposity and body fat content, and the risk of type 2 diabetes in the general adult population. Two authors extracted the data in duplicate. Random effects dose-response meta-analyses were performed to estimate the degree and shape of the associations.

Study answer and limitations 216 cohort studies with 2.3 million individuals with type 2 diabetes among 26 million participants were included. An increase in body mass index (BMI) of 5 units was associated with a 72% higher risk of type 2 diabetes (relative risk 1.72, 95% confidence interval 1.65 to 1.81, n=182 studies). Relative risks were 1.61 (1.52 to 1.70; n=78) for a 10 cm larger waist circumference, 1.63 (1.50 to 1.78; n=34) for an increase in waist-to-hip ratio of 0.1 units, 1.73 (1.51 to 1.98; n=25) for an increase in waist-to-height ratio of 0.1 units, 1.42 (1.27 to 1.58; n=9) for an increase in visceral adiposity index of 1 unit, 2.05 (1.41 to 2.98; n=6) for a 10% higher percentage body fat, 1.09 (1.05 to 1.13, n=5) for an increase in body shape index of 0.005 units, 2.55 (1.59 to 4.10, n=4) for a 10% higher body adiposity index, and 1.11 (0.98 to 1.27; n=14) for a 10 cm larger hip circumference. The risk of type 2 diabetes increased strongly and linearly across the whole range of BMI values, from 15 to 45. Positive linear or monotonic associations were also found in all regions and ethnicities. A strong linear association was found between waist circumference and the risk of type 2 diabetes. Higher total and visceral fat mass were also associated with the risk of type 2 diabetes although the number of studies was small. The results might have been overestimated for some measures owing to high heterogeneity in the data and publication bias.

What this study adds The study indicated a strong positive linear association between BMI and risk of type 2 diabetes across the whole range of BMI values. A larger waist circumference was strongly and linearly associated with the risk of type 2 diabetes.

Associations between measures of adiposity and risk of type 2 diabetes

Anthropometric measures	Comparison (unit increase)	No of studies	Relative risk (95% CI)	Heterogeneity (I^2, %)
Thigh circumference (cm)	5	2	1.11 (0.86 to 1.42)	85
Hip circumference (cm)	10	14	1.11 (0.98 to 1.27)	98
Body shape index (unit)	0.005	5	1.09 (1.05 to 1.13)	71
Visceral adiposity index (unit)	1	9	1.42 (1.27 to 1.58)	84
Waist-to-hip ratio (unit)	0.1	34	1.63 (1.50 to 1.78)	99
Waist circumference (cm)	10	78	1.61 (1.52 to 1.70)	99
Body mass index	5	182	1.72 (1.65 to 1.81)	99
Waist-to-height ratio (unit)	0.1	25	1.73 (1.51 to 1.98)	97
Percentage body fat	10	6	2.05 (1.41 to 2.98)	91
Body adiposity index (unit)	10	4	2.55 (1.59 to 4.10)	98

Funding, competing interests, and data sharing
No funding provided.
No competing interests declared. No additional data available.

Systematic review registration PROSPERO CRD42021255338.

SARS-CoV-2 vaccination and myocarditis or myopericarditis

Husby A, Hansen JV, Fosbøl E, et al

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Find this at doi: 10.1136/bmj-2021-068665

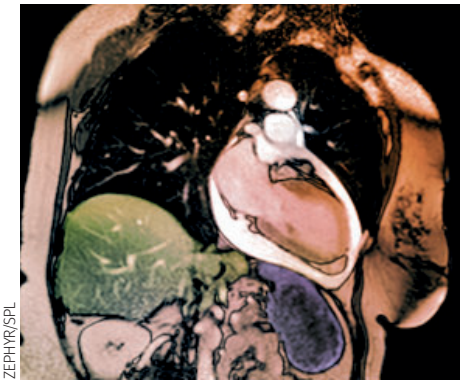
Study question Is SARS-CoV-2 vaccination associated with myocarditis or myopericarditis?

Methods This cohort study of 4 931 775 individuals aged 12 years or older in Denmark investigated the association between SARS-CoV-2 vaccination and myocarditis or myopericarditis. The disorders were defined as a combination of a hospital diagnosis of myocarditis or pericarditis, increased troponin levels, and a hospital stay of more than 24 hours. Follow-up time before vaccination was compared with follow-up time 0-28 days from the date of vaccination for both first and second doses, using Cox proportional hazards regression with age as an underlying time scale to estimate hazard ratios adjusted for potential confounders.

Study answer and limitations During follow-up, 269 participants developed myocarditis or myopericarditis, of whom 108 (40%) were 12-39 years old and 196 (73%) were male. Of 3 482 295 individuals vaccinated with BNT162b2 (Pfizer-BioNTech), 48 developed myocarditis or myopericarditis within 28 days from the vaccination date compared with unvaccinated individuals (adjusted hazard ratio 1.34 (95% confidence interval 0.90 to 2.00); absolute rate 1.4 per 100 000 vaccinated individuals within 28 days of vaccination (95% confidence interval 1.0 to 1.8)). Among 498 814 individuals vaccinated with mRNA-1273 (Moderna), 21 developed myocarditis or myopericarditis within 28 days from the vaccination date (adjusted hazard ratio 3.92 (2.30 to 6.68); absolute rate 4.2 per 100 000 vaccinated individuals within 28 days of vaccination (2.6 to 6.4)). Information on electrocardiography or cardiac imaging could not be obtained. The clinical outcomes of myocarditis or myopericarditis were predominantly mild, although precision in describing clinical outcomes was limited owing to few myocarditis or myopericarditis events.

What this study adds Vaccination with mRNA-1273 was associated with a significantly increased rate of myocarditis or myopericarditis, which was about threefold to fourfold higher than that for BNT162b2.

Funding, competing interests, and data sharing
AHu is supported by the Lundbeck Foundation. See full paper on bmj.com for competing interests and data sharing.



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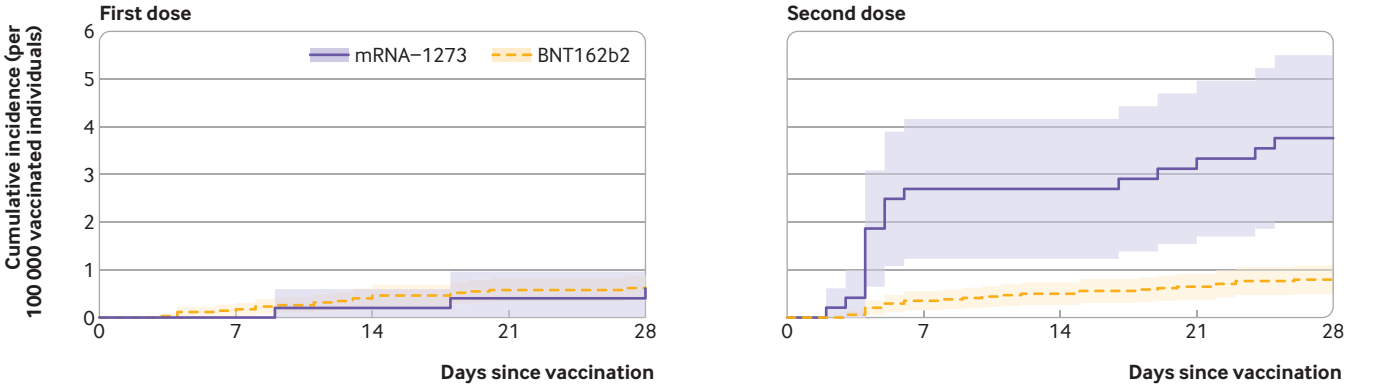

Cumulative no of events after mRNA-1273	0	0	<3	<3	3	0	13	13	16	18
Cumulative no of events after BNT162b2	0	6	16	20	21	0	12	17	22	27
No of individuals vaccinated with mRNA-1273	498 812	497 394	495 868	494 385	324 385	483 270	480 224	475 455	469 075	461 147
No of individuals vaccinated with BNT162b2	3 482 275	3 473 640	3 463 991	3 004 903	2 080 614	3 417 744	3 406 113	3 391 206	3 369 584	3 340 072

Cumulative incidence of myocarditis or myopericarditis events after vaccination, by vaccine type and dose number

Drug treatment for panic disorder with or without agoraphobia

Chawla N, Anothaisintawee T, Charoenrungrueangchai K, et al

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Find this at doi: 10.1136/bmj-2022-066084

Study question What drug classes and individual selective serotonin reuptake inhibitors (SSRIs) have high remission rates and low risk of adverse events in the treatment of panic disorder with or without agoraphobia?

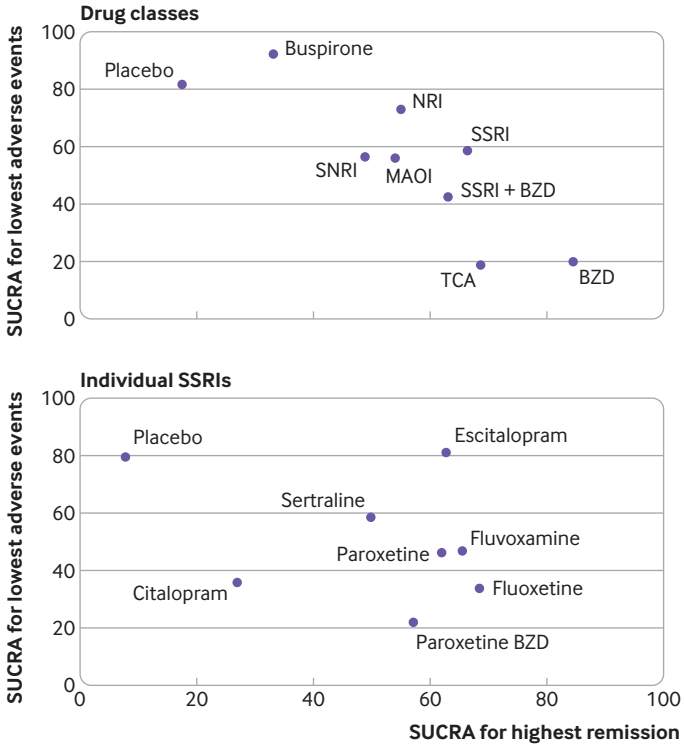
Methods This systematic review and network meta-analysis included randomised controlled trials of adults aged ≥18 years with a diagnosis of panic disorder, compared drugs used to treat the disorder, and measured the outcomes of interest, including remissions, dropouts, and adverse events. A two stage network meta-analysis with surface under the cumulative ranking curve (SUCRA) was used to estimate the comparative efficacy of drug classes and individual SSRIs.

Study answer and limitations 87 studies including a total of 12 800 participants and 12 drug classes were eligible for inclusion. 86 studies had some concern or were at high risk of bias. Network meta-analysis indicated that tricyclic antidepressants, benzodiazepines, monoamine oxidase inhibitors, SSRIs, and serotonin-noradrenaline reuptake inhibitors were associated with significantly higher remission rates than placebo (risk ratio 1.39 (95% confidence interval 1.26 to 1.54), 1.47 (1.36 to 1.60), 1.30 (1.00 to 1.69), 1.38 (1.26 to 1.50), and 1.27 (1.12 to 1.45), respectively). A SUCRA cluster ranking plot considering both remission and adverse events among all drug classes indicated that SSRIs were associated with high remission and low risk of adverse events. Among individual SSRIs, sertraline and escitalopram provided high remission with an acceptable risk of adverse events. The findings were, however, based on studies of moderate to very low certainty levels of evidence.

What this study adds The findings suggest that SSRIs provide high remission with low risk of adverse events in the treatment of panic disorder. Among SSRIs, sertraline and escitalopram provided high remission with an acceptable risk of adverse events.

Funding, competing interests, and data sharing No funding provided. No competing interests declared. No additional data available.

Systematic review registration PROSPERO CRD42020180638.



Cluster ranking plot of surface under cumulative ranking curves (SUCRA) of remission and adverse drug events. The plot is based on cluster analysis of SUCRA values. Each plot represents SUCRA values for two outcomes (ie, remission and adverse events). Treatments in the upper right corner are more effective (increased remission rate) and safer (lower risk of adverse events) compared with the other treatments. BZD=benzodiazepine; MAOI=monoamine oxidase inhibitor; NaSSA=noradrenergic and specific serotonergic antidepressant; NRI=noradrenaline reuptake inhibitor; SSRI=selective serotonin reuptake inhibitor; SNRI=serotonin-noradrenaline reuptake inhibitor; TCA=tricyclic antidepressant

Surgical fixation with K-wires versus casting in adults with fracture of distal radius

Costa ML, Achten J, Ooms A, et al, on behalf of the DRAFFT2 Collaborators

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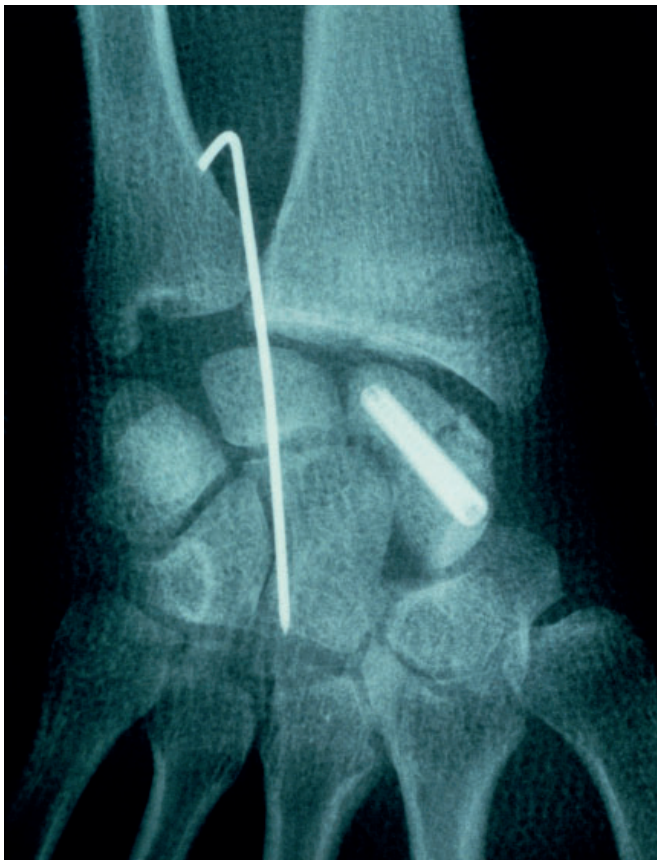
Find this at doi: 10.1136/bmj-2021-068041

Study question Do adults with a dorsally displaced fracture of the distal radius have better wrist function after treatment with surgical fixation with K-wires or a moulded cast?

Methods In this randomised clinical superiority trial, conducted in 36 UK NHS hospitals, 500 adults (16 years or older) with a dorsally displaced fracture of the distal radius were randomly assigned to a moulded cast or surgical fixation with K-wires plus cast after manipulation to realign their bone fragments. The primary outcome measure was the Patient Rated Wrist Evaluation (PRWE) score (assessing pain, function, and disability of the wrist) at 12 months post-randomisation. Secondary outcomes included quality of life and complications, including the need for further surgery.

Study answer and limitations The mean age of participants was 60 years, and most (n=417; 83%) were women; 255 participants were treated with a moulded cast, 245 had surgical fixation, and 395 (79%) completed follow-up. No statistically significant difference was found in PRWE score at 12 months (cast group (n=200), mean 21.2 (SD 23.1); K-wire group (n=195), mean 20.7 (22.3)) or at earlier time points. In the cast group, 33 (13%) participants needed surgical fixation for loss of fracture position in the first six weeks compared with one in the K-wire group. Owing to the nature of the intervention, neither clinicians nor patients could be blinded to the treatment allocation.

What this study adds Surgical fixation of a dorsally displaced distal radius fracture with K-wires in adults was not associated with improved wrist function at 12 months compared with a cast.



MEDICAL PHOTO NHS LOTHIAN/SPL

Funding, competing interests, and data sharing This project was funded by the UK National Institute for Health Research (NIHR) Health Technology Assessment Programme and was supported by NIHR Oxford Biomedical Research Centre. See full paper on bmj.com for competing interests. Data requests should be submitted to the corresponding author for consideration.

Trial registration ISRCTN registry ISRCTN11980540.

Patient Reported Wrist Evaluation results in intention to treat population

	Cast		K-wire		Mean difference		
Time point	No	Mean (SD)	No	Mean (SD)	Unadjusted	Adjusted (95% CI)	P value
Baseline (post-injury)	253	84.3 (13.30)	243	81.91 (14.52)	−2.39	-	-
3 months	213	42.08 (23.85)	201	41.56 (24.77)	−0.51	−0.45 (−4.37 to 3.47)	0.82
6 months	202	28.35 (23.35)	206	27.56 (22.33)	−0.79	−0.32 (−4.26 to 3.62)	0.87
12 months (primary outcome)	200	21.16 (23.09)	195	20.69 (22.33)	−0.47	−0.34 (−4.33 to 3.66)	0.87
Area under curve over 12 months	-	38.19*	-	37.60*	-	−0.60 (−4.41 to 3.21)	0.88

*Model estimate. Analysis based on mixed effects model with repeated measures from all time points.