research

Predictive performance of model at estimating fat mass in children and adolescents p 17

Gender of surgeon and outcomes of gastrointestinal surgery in Japan p 18

Text message intervention and risk of sexually transmitted reinfections p 20

ORIGINAL RESEARCH Individual participant data meta-analysis

External validation of a prediction model for estimating fat mass in children and adolescents in 19 countries

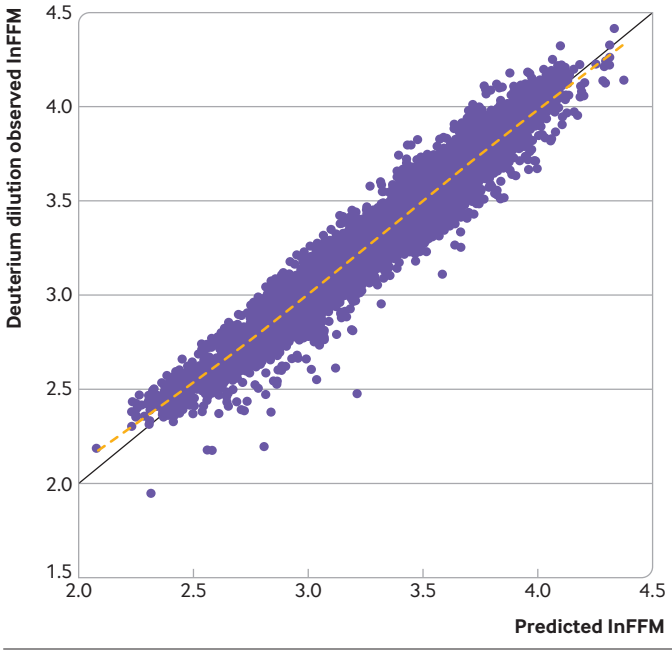
Hudda MT, Wells JCK, Adair LS, et al

Cite this as: *BMJ* 2022;378:e071185

Find this at doi: 10.1136/bmj-2022-071185

Study question Is a UK based prediction model for estimating fat-free mass (and indirectly fat mass) in children and adolescents valid in non-UK settings?

Methods Individual participant data were obtained on 5693 people aged 4-15 years with complete data on the predictors included in the UK based model (weight, height, age, sex, ethnicity) and on the outcome measure (fat-free mass determined by deuterium dilution assessment). Predictive performance statistics of R^2, calibration slope, calibration-in-the-large, and root mean square error were assessed in each of 19 countries and then pooled through random effects meta-analysis. Calibration plots were also derived for each country, including flexible calibration curves.



Calibration assessment of prediction model based on natural log transformed fat-free mass (lnFMM) across 19 countries

Study answer and limitations The model showed good predictive ability in all non-UK populations of children and adolescents, providing R^2 values of >75% in all settings, with excellent calibration of observed and predicted values. Root mean square error values (on fat-free mass scale) were <4 kg in 17 of the 19 settings. Pooled values (95% CIs) of R^2, calibration slope, and calibration-in-the-large were 88.7% (85.9% to 91.4%), 0.98 (0.97 to 1.00), and 0.01 (−0.02 to 0.04), respectively. To improve accuracy of the predictions, the model equation was recalibrated for the intercept in each setting to provide country specific equations. A limitation was that only a small number of individuals were from East Asia and none from the Middle East.

What this study adds The UK based model showed strong predictive performance at estimating fat-free mass (thus fat mass) in children and adolescents in a range of non-UK settings. The equation, based on readily available markers, performed consistently well in both low-middle and high income settings.

Funding, competing interests, and data sharing Supported by the National Institute for Health and Care Research Applied Research Collaboration South London. No competing interests. Data from the studies are available on request to the respective principal investigators.

The long road to gender equity in surgery

ORIGINAL RESEARCH Retrospective cohort study

Comparison of short term surgical outcomes of male and female gastrointestinal surgeons in Japan

Okoshi K, Endo H, Nomura S, et al

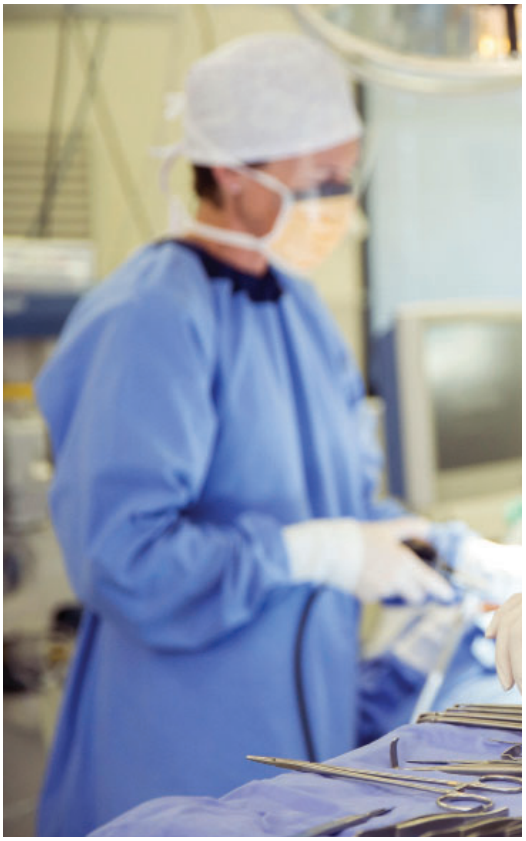
Cite this as: *BMJ* 2022;378:e070568

Find this at doi: 10.1136/bmj-2022-070568

Study question Do the short term outcomes of gastrointestinal surgery differ between male and female surgeons in Japan?

Methods The Japanese National Clinical Database (NCD) (2013-17) was used to analyse the outcomes of distal gastrectomy, total gastrectomy, and low anterior resection done by male and female surgeons. Primary outcomes included surgical mortality, surgical mortality combined with postoperative complications, pancreatic fistulae (distal gastrectomy/total gastrectomy), and anastomotic leakage (low anterior resection). The association between surgeons' gender and surgical outcomes was examined using logistic regression models, adjusting for characteristics of patients, surgeons, and hospitals.

Study answer and limitations A total of 149 193 distal gastrectomy surgeries (male surgeons: 140 971 (94.5%); female surgeons: 8222 (5.5%)); 63 417 gastrectomy surgeries (male surgeons: 59 915 (94.5%); female surgeons: 3502 (5.5%)); and 81 593 low anterior resection procedures (male surgeons: 77 864 (95.4%); female surgeons: 3729 (4.6%)) were done. Female surgeons had fewer post-registration years, operated on higher risk patients, and performed fewer laparoscopic surgeries than did male surgeons. Male and female surgeons did not differ significantly in adjusted risk for surgical mortality and surgical mortality combined with Clavien-Dindo grade ≥3 complications for distal gastrectomy, total gastrectomy, and low anterior resection; pancreatic fistula for distal gastrectomy and total gastrectomy; and anastomotic leakage for low anterior resection. The study included far fewer female than male surgeons, and a single adverse event could significantly affect the statistical outcomes.



GREGG VIGNAL/ALAMY

COMMENTARY Progress must accelerate in the interests of both patients and surgeons

The issue of gender equity continues to pervade all aspects of medicine and surgery. Despite gender parity among students entering medical school in most western countries, studies have shown that women are less likely to enter surgery, more likely to drop out of surgical training, and less likely to secure a consultant position in a teaching hospital on completion of training.[1-3]

Persistent inequity

Gender inequity persists even for female consultant surgeons.[4] Studies have shown preferential referral from male doctors to male surgeons, reduced opportunity for leadership roles, and worse remuneration—all despite female surgeons having equal or possibly better patient outcomes.[5 6]

In their study, Okoshi and colleagues compared the surgical outcomes of male and female surgeons in Japan after three common procedures (distal gastrectomy, total gastrectomy, and low anterior resection).[7] The researchers used the Japanese National Clinical Database, a comprehensive cancer database that captures more than 95% of Japan's cancer case load. The authors found that female surgeons performed only 5% of these procedures and that female surgeons were less likely than male surgeons to gain employment in high volume centres.

Continued lack of progress on discrimination that affects half the population is unacceptable

Female surgeons were more likely than males to be assigned high risk patients (malnourished, using long term steroids, or with higher stage disease), but despite this, the researchers found no differences in the rates of death or surgical morbidity between male and female surgeons. Female surgeons were also less likely to use minimally invasive techniques; the authors suggested this could be due to reduced training opportunities linked to preferential treatment of male trainees and the competing demands of women's traditional societal roles, including raising a family.

These findings should come as no surprise. Japan has always been a patriarchal society with deeply entrenched traditional gender roles. Despite being a developed and modern country, Japan has done little to improve gender equity.[8-10] The gender wage gap in Japan is the second largest of all OECD countries, surpassed only by South Korea.[11] Only four years ago, one of Japan's most prestigious universities was found guilty of tampering with medical school admission scores in favour of male applicants, deepening inequity still further.[12]

Challenging the status quo

Okoshi and colleagues' study is therefore of fundamental importance. Women

Cherry E Koh Cherry.koh@sydney.edu.au
See bmj.com for author details

What this study adds Female surgeons in Japan treated relatively high risk patients, but the risk adjusted outcomes did not differ significantly between male and female surgeons.

Funding, competing interests, and data sharing This study received no financial support. See bmj.com for competing interests. To access the NCD, it is necessary to submit a proposal through an NCD related society and request access from the NCD Secretariat.

Adjusted risk for female surgeons compared with male surgeons

Outcome	Adjusted odds ratio (95% CI)
Distal gastrectomy	
Surgical mortality	0.98 (0.74 to 1.29)
Surgical mortality or complication with CDC≥3	1.03 (0.93 to 1.14)
Pancreatic fistula	1.16 (0.97 to 1.38)
Total gastrectomy	
Surgical mortality	0.83 (0.57 to 1.19)
Surgical mortality or complication with CDC≥3	0.92 (0.81 to 1.05)
Pancreatic fistula	1.02 (0.84 to 1.23)
Low anterior resection	
Surgical mortality	0.56 (0.30 to 1.05)
Surgical mortality or complication with CDC≥3	1.02 (0.91 to 1.15)
Anastomotic leakage	1.04 (0.92 to 1.18)

CI=confidence interval; CDC=Clavien-Dindo classification.

in Japan are respectfully challenging the status quo, doing so with data, and demonstrating just how challenging the situation is for female surgeons in that country. Rapid change is needed, in the interest of both clinicians and patients.

Continued lack of progress on discrimination that affects half the population is unacceptable. And as demonstrated by this study, despite female surgeons experiencing training inequity, reduced employment opportunities, and more frail and challenging patients, the outcomes of their patients are the same as those of male surgeons. It is crucial that the public in Japan are made aware of these findings and understand that female surgeons are not second class.

Shared experiences

The challenges faced by female surgeons in Japan are not unique, and many female surgeons elsewhere have had similar experiences.[1-14] Themes that come up repeatedly include unfavourable working environments caused by harassment, concerns about stifled career development, baseless assumptions about female surgeons' abilities, and the lack of role models.[15 16] Combined with inadequate support with family commitments, these inequities eventually cause many to doubt their career choice, and tip talented clinicians towards settling for a different career path.

Change at work, at home, and at societal level is necessary to support women in the workforce. Respect and attitudinal change from colleagues will help female surgeons feel more valued at work. Respect and attitudinal change from family members, including sharing domestic responsibilities, will help create a more equal division of responsibilities at home.

Policy changes to improve workplace flexibility, innovative hospital based childcare arrangements, and a genuine and inclusive approach to recruitment and career progression are all changes that could lead to a lasting improvement in gender equity in surgery.

Leadership at all levels is crucial to drive change, including commitment from government ministers, professional surgical societies, hospital managers, and departmental leads. Only through broad engagement can national regulations (such as targets or quotas supporting gender equity in recruitment, training, and retention) be combined with local measures (such as codes of conduct, safer workplace practices, and mentoring opportunities).[17] Progress in gender equity is long overdue in many countries and hospitals worldwide.

Cite this as: *BMJ* 2022;378:o2263

Find the full version with references at http://dx.doi.org/10.1136/bmj.o2263

Effectiveness of a behavioural intervention delivered by text messages (safetxt) on sexually transmitted reinfections in people aged 16-24

Free C, Palmer MJ, McCarthy OL, et al

Cite this as: *BMJ* 2022;378:e070351

Find this at doi: 10.1136/bmj-2022-070351

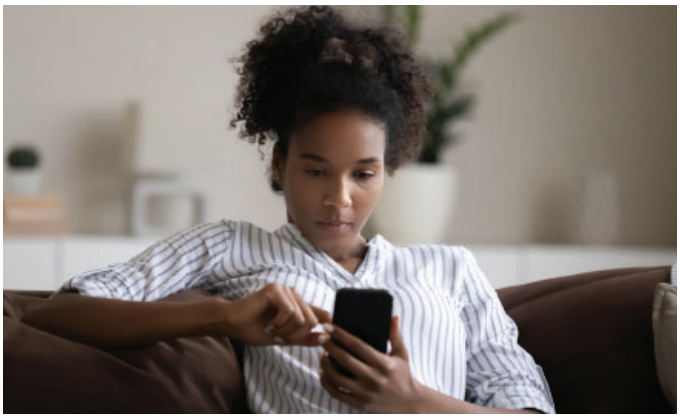
Study question What are the effects of a text message intervention (safetxt) targeting sexual behaviours on incidence of chlamydia and gonorrhoea reinfection at one year in people aged 16-24 years?

Methods A parallel group randomised controlled trial was performed in 6248 participants from 92 sexual health clinics in the United Kingdom aged 16-24 with a diagnosis of, or treatment for, chlamydia or gonorrhoea or for non-specific urethritis in the past two weeks who owned a mobile phone. 3123 participants assigned to the safetxt intervention received a series of text messages aimed at improving sex behaviours. The number of messages sent differed according to sex or gender and sexual orientation. 3125 control participants received monthly text messages asking for any change to their postal or email address. Safetxt targeted partner notification, condom use, and testing for sexually transmitted infections before sex with new partners. Follow-up was for 12 months. The primary outcome was the cumulative incidence of chlamydia or gonorrhoea reinfection at one year, assessed by nucleic acid amplification tests. Secondary outcomes (see full paper on bmj.com) were measured at both four week and 12 month follow-up.

Study answer and limitations Primary outcome data were available for 4675/6248 (74.8%) participants. At one year, the cumulative incidence of chlamydia or gonorrhoea reinfection was 22.2% (693/3123) in the safetxt arm versus 20.3% (633/3125) in the control arm (odds ratio 1.13, 95% confidence interval 0.98 to 1.31). Men were under-represented in the trial (35% men and 65% women), and the primary outcome was only available for 75% of participants in each group.

What this study adds The safetxt intervention did not reduce sexually transmitted infections. More infections occurred in the safetxt group.

Funding, competing interests, and data sharing Funded by the National Institute for Health and Care Research Public Health Research. See full paper on bmj.com for competing interests. Individual deidentified patient data, including a data dictionary, will be made available via the FreeBIRD website.



Primary and selected secondary outcomes at 12 month follow-up. Values are numbers (percentages) estimated from imputed data unless stated otherwise

Outcomes	Safetxt group (n=3123)	Control group (n=3125)	Odds ratio (95% CI)	P value
Primary outcome				
Cumulative incidence of chlamydia or gonorrhoea reinfection	693 (22.2)	633 (20.3)	1.13 (0.98 to 1.31)	0.085
Secondary outcomes				
Condom use at last sexual encounter	1056 (33.8)	975 (31.2)	1.14 (1.01 to 1.28)	0.038
≥2 sexual partners since trial start	1777 (56.9)	1713 (54.8)	1.11 (1.00 to 1.24)	0.061
Sex with someone new since trial start	2177 (69.7)	2106 (67.4)	1.13 (1.00 to 1.28)	0.06
Condom use at first sexual encounter with most recent partner	1699 (54.4)	1522 (48.7)	1.27 (1.11 to 1.45)	0.001
STI testing:				
For self, before first sexual encounter with recent new partner (self-reported)	2067 (66.2)	2128 (68.1)	0.92 (0.79 to 1.06)	0.24
For self, before first sexual encounter with recent new partner (clinic record confirmed)	1234 (39.5)	1278 (40.9)	0.95 (0.82 to 1.10)	0.48
Recent new partner tested before sex with participant	977 (31.3)	881 (28.2)	1.15 (0.88 to 1.51)	0.28

STI=sexually transmitted infection.
Logistic regression analysis adjusted for prespecified baseline covariates (age, type of STI at baseline, sexual orientation, and ethnicity).