RESEARCH

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THIS WEEK'S RESEARCH QUESTIONS

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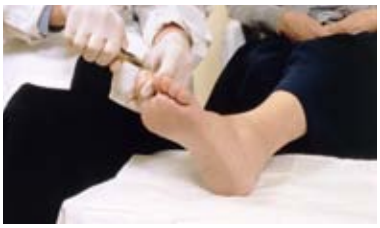
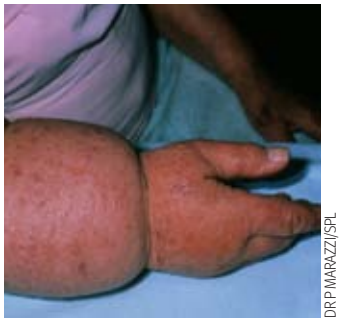


CHRIS PRIEST/SPL

Lymphoedema after treatment for breast cancer

About a fifth of women treated for breast cancer develop lymphoedema. Since the lymphoedema tends to appear months or years after the cancer treatment, usually develops slowly, and is a chronic condition that can only be managed rather than cured, it is in danger of being neglected by the medical profession. Afaf Girgis and colleagues investigated the unmet needs of women with lymphoedema (p 32), and identified several shortcomings related to information and support, particularly from doctors and allied health workers. The women's view seemed to be that lymphoedema was not considered a serious illness in the health service. This may not be surprising—similar findings have been seen with other disfiguring or disabling conditions that are not life threatening. But what, if anything, do we do about it?



DR P. MARAZZI/SPL

Social gradients in health in non-smokers

We've had plenty of evidence that people in lower socioeconomic groups generally have poorer health. Many countries also have a marked social gradient in smoking rates, and up to 85% of the socioeconomic differences in mortality are thought to be attributable to smoking. This was confirmed in a recent *BMJ* study (2009;338:b480) of adults in west central Scotland, which found that people who had never smoked had much better survival rates than smokers, regardless of their social position, with women who had never smoked having the best survival. However, after 28 years of follow-up, the social gradient in mortality was still seen in women who had never smoked.

To investigate this further, the researchers re-examined the data from their Renfrew and Paisley Study on more than 3600 women who had never smoked, and Carole Hart and colleagues report the results (p 33). Women in the lower occupational classes were more likely to die of cardiovascular disease (but not of cancer), with the differences being largely explained by obesity, systolic blood pressure, and lung function. Women who were not obese had relatively low mortality rates, regardless of their social position, whereas obese women had much higher mortality. Unfortunately, compared with smokers in the study cohort, women who had never smoked were more likely to be obese, especially those in lower social positions.

This phenomenon is discussed further by Johan Mackenbach in his accompanying editorial (p 2). He admits that "overweight is more common among never smokers, perhaps because of the effects of smoking on appetite and resting metabolic rate" but goes on to point out: "it is important not to forget that smoking is a much stronger risk factor for mortality than most other risk factors, including obesity… Exchanging smoking for obesity is a good bargain."

Falls—are feet the way forward?

Falls in older people are a major public health concern, and problems with feet and footwear add to the risk. In this Australian randomised controlled trial, Martin Spink and colleagues investigated whether a multifaceted podiatry intervention could reduce falls among older people living in the community with disabling foot pain (p 31). The intervention included a programme of foot and ankle exercises, foot orthoses, advice on footwear, subsidies to obtain appropriate footwear, and general education about falls.

It seemed to be a success—the mean number of falls per person per year was 1.06 for the control group (range 0-15) and 0.67 for the intervention group (range 0-6), a significant reduction. Since the components of the intervention are cheap and simple to implement, this approach could be a useful addition to existing falls prevention programmes, say the authors.

In an accompanying editorial, Wesley Vernon agrees that podiatrists could potentially help reduce falls in older people, and that when assessing patients at risk of falling, primary care doctors should consider whether the patient has foot pain, foot and ankle weakness, and reduced range of motion (p 1).

SPL

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Effect of tranexamic acid in traumatic brain injury Collaborators asked whether tranexamic acid, which reduces bleeding in surgical patients and reduces mortality due to bleeding in trauma patients, might also have an effect on intracranial haemorrhage in patients with traumatic brain injury (doi:10.1136/bmj.d3795).

Physical inactivity and idiopathic pulmonary embolism in women Results of a prospective cohort study indicated that a sedentary lifestyle is associated with incident pulmonary embolism in women, say Christopher Kabrhel and colleagues (doi:10.1136/bmj.d3867).

Effect of financial incentives on incentivised and non-incentivised clinical activities Tim Doran and colleagues investigated whether the incentive scheme for UK general practitioners led them to neglect activities not included in the scheme. (doi:10.1136/bmj.d3590)

Association of echocardiography before major elective non-cardiac surgery with postoperative survival and length of hospital stay Does preoperative echocardiography affect postoperative outcomes, ask Duminda N Wijeysundera and colleagues (doi:10.1136/bmj.d3695)

Effectiveness of a multifaceted podiatry intervention to prevent falls in community dwelling older people with disabling foot pain: randomised controlled trial

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EDITORIAL by Vernon

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STUDY QUESTION Is podiatry treatment effective in preventing falls in community dwelling older people with disabling foot pain?

SUMMARY ANSWER A multifaceted podiatry intervention was associated with a 36% reduction in the rate of falls in community dwelling older people with disabling foot pain.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS Foot problems and inappropriate footwear impair balance and gait and increase the risk of falls. A multifaceted podiatry intervention was associated with a significantly reduced rate of falls in community dwelling older people with disabling foot pain.

Design

Parallel group randomised controlled trial with 12 months' follow-up and outcome assessors blind to group allocation. The intervention group received a multifaceted podiatry intervention consisting of foot orthoses, footwear advice, a footwear subsidy, a home based exercise foot and ankle exercise programme, a falls prevention education booklet, and routine podiatry care for 12 months. The control group received routine podiatry care for 12 months.

Participants and setting

305 community dwelling men and women (mean age 74 (SD 6) years) with disabling foot pain and an increased risk of falling were evaluated at a university health sciences clinic in Melbourne, Australia.

RATE OF FALLS AND PROPORTIONS OF FALLERS AND MULTIPLE FALLERS BY TREATMENT GROUP OVER 12 MONTHS

Outcome measure	Podiatry intervention group (n=153)	Control group (n=152)	Falls risk ratio (95% CI)	P value
Mean (range) falls per participant	0.67 (0-6)	1.06 (0-15)	0.64 (0.45 to 0.91)*	0.01
No (%) with ≥1 fall	64 (42)	75 (49)	0.85 (0.66 to 1.08)†	0.19
No (%) with ≥2 falls	21 (14)	33 (22)	0.63 (0.38 to 1.04)†	0.07

*Incidence rate ratio.
†Relative risk.

Primary outcome(s)

Proportion of fallers and multiple fallers, falling rate, and injuries resulting from falls over a 12 month period.

Main results and the role of chance

Participants in the intervention group (n=153) experienced 36% fewer falls than participants in the control group (incidence rate ratio 0.64, 95% confidence interval 0.45 to 0.91, P=0.01). The proportion of fallers and multiple fallers did not differ significantly between the groups (relative risk 0.85, 0.66 to 1.08, P=0.19 and 0.63, 0.38 to 1.04, P=0.07). One fracture occurred in the intervention group and seven in the control group (0.14, 0.02 to 1.15, P=0.07).

Harms

None reported.

Bias, confounding, and other reasons for caution

Owing to the nature of the intervention it was not possible to blind participants to their group allocation.

Generalisability to other populations

We recruited community dwelling older people with disabling foot pain and an increased risk of falling. Whether the intervention would be effective in residential care settings or in older people without foot pain requires further investigation.

Study funding/potential competing interests

This study was funded by the National Health and Medical Research Council of Australia and the La Trobe University central large grant scheme. HBM is currently a National Health and Medical Research Council fellow (clinical career development award, 433049). The foot orthoses in this study were provided by Foot Science International, Christchurch, New Zealand.

Trial registration number

Australian New Zealand Clinical Trials Registry ACTRN12608000065392.

BMJ pico: advice to authors

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Priorities for women with lymphoedema after treatment for breast cancer: population based cohort study

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STUDY QUESTION What are the perceived unmet needs among women treated for breast cancer and in whom symptoms and signs indicate the presence of lymphoedema?

SUMMARY ANSWER Women commonly report a need for information related to their condition, acknowledgement by those in the health system of the seriousness of their condition, and needs in relation to their body image and self esteem.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS Women treated for breast cancer can have moderate to high needs with respect to coping with lymphoedema. We found that their needs are specifically in relation to their need for information about their condition and support in its management, particularly from their doctor and allied health workers.

Participants and setting

Potential participants were drawn from cancer registries from three Australian states, met the inclusion criteria of a diagnosis of breast cancer three to five years previously, and aged 18 to 70 at time of their diagnosis. After a multistage process, 237 of an initial 1930 eligible women were identified as having symptoms and signs indicative of lymphoedema.

Design, size, and duration

This was a cross sectional study. The first stage was to identify women from the population who were likely to have lymphoedema. A self report questionnaire and physical measures of arm circumference were used to categorise women. Only women identified as having lymphoedema completed the Lymphoedema Needs Survey-Breast Cancer. This survey quantified unmet needs from none or not applicable to high level within the previous month, across the domains of psychological, health system and information, physical and daily living, patient care and support, sexuality needs, body image, and financial needs.

Main results and the role of chance

The 10 most common "moderate or high level needs" of women in relation to their lymphoedema were to have their doctor and allied health workers be fully informed about lymphoedema, acknowledge the seriousness of the condition, and be willing to treat it as well as a need for accessing up to date treatments, both mainstream and alternative, and financial assistance for their garments. These top individual items were rated as moderate or high level by 27% to 34% of the group with lymphoedema. Factor analysis showed that 49% of the overall variance was driven by questions related to the need for information and support. The average of the 11 items that comprised this score showed an overall low level of need, with 36% of women reporting some level of need in this domain. The odds of reporting a need in this domain were higher if women experienced shoulder stiffness (odds ratio 2.83, 95% confidence interval 1.44 to 5.54) but less if surgery occurred on their non-dominant side (0.50, 0.26 to 0.98).

NEEDS IN INFORMATION AND SUPPORT DOMAIN AMONG WOMEN WITH LYMPHOEDEMA AFTER TREATMENT FOR BREAST CANCER

- To provide family members with information about lymphoedema
- To be fully informed about lymphoedema support groups in the area
- To be given information (written, diagrams, drawings) about aspects of managing lymphoedema
- To be adequately informed about the treatment options (benefits and side effects) for lymphoedema before you choose to have them
- To be informed about alternative treatment for lymphoedema
- To be informed of the availability of lymphoedema treatment centres
- To be given a full explanation of those tests and treatments for which you would like explanations
- To receive consistent lymphoedema treatment information that does not vary between sources
- To be fully informed about the causes of lymphoedema
- To have access to vocational assistance/counselling for help in adjusting to having lymphoedema
- Coping with frustration with the lack of assistance in dealing with the lymphoedema

(11 items; variance 49.1%, Cronbach's α 0.95, mean (SD) score 0.61 (0.86), frequency 35.5%)

Bias, confounding, and other reasons for caution

This study reflects the needs of women with moderate swelling as determination relied on the combination of self reported symptoms and arm circumference measures. Women who might have experienced important symptoms but did not have circumferential changes would not have been included in this study.

Generalisability to other populations

The generalisability of these findings to women with mild lymphoedema, lymphoedema in the trunk or legs, or lymphoedema from other causes has yet to be determined.

Study funding/potential competing interests

The study was funded by National Breast Cancer Foundation, Australia; SK is funded by National Breast Cancer Foundation.

Cause specific mortality, social position, and obesity among women who had never smoked: 28 year cohort study

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EDITORIAL by Mackenbach

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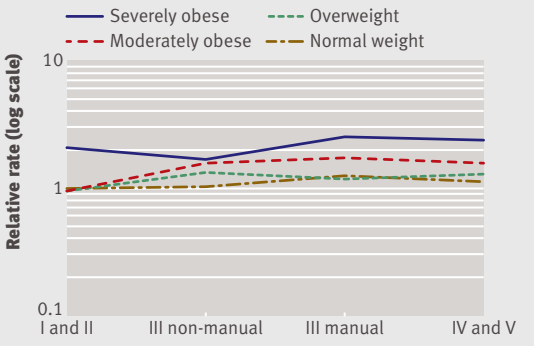
STUDY QUESTION What are the relations between cause of death and social position among women who have never smoked?

SUMMARY ANSWER Women in the lower occupational classes who had never smoked were more likely to die of cardiovascular disease but not of cancer, with the differences being largely explained by obesity, systolic blood pressure, and lung function.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS Although women who have never smoked experience relatively low average mortality rates, those in lower social positions still seem to do less well. In this cohort, compared with smokers, women who had never smoked were more likely to be obese, especially those in lower social positions. Obese women who had never smoked had much higher mortality rates, whereas those who were not obese had relatively low mortality rates, regardless of their social position.

AGE ADJUSTED MORTALITY BY OCCUPATIONAL CLASS AND BODY MASS INDEX IN WOMEN WHO HAD NEVER SMOKED, WITH NORMAL WEIGHT WOMEN IN OCCUPATIONAL CLASS I AND II AS BASELINE GROUP



Participants and setting

3613 women who had never smoked, drawn from a cohort of 8353 women and 7049 men, aged 45-64 when recruited to the Renfrew and Paisley Study, Scotland, during 1972-6.

Design, size, and duration

In this prospective cohort study we linked data obtained at recruitment with dates and causes of all deaths during the subsequent 28 years. Women who had never smoked were categorised by occupational class (I and II, III non-manual, III manual, and IV and V) and body mass index groups (normal weight, overweight, moderately obese, and severely obese).

Main results and the role of chance

Among the women who had never smoked, those in lower occupational classes were on average shorter, had poorer lung function, and higher systolic blood pressure. Overall, 43% (n=1555) were overweight, 14% (n=515) moderately obese, and 5% (n=194) severely obese. Obesity rates were higher in lower occupational classes and much higher in all occupational classes than in current female smokers in the full cohort. Half (n=1796) the women died, 51% (n=916) from cardiovascular disease and 27% (n=487) from cancer. Compared with occupational class I and II, all cause mortality rates were over a third higher in III manual (relative rate 1.35, 95% confidence interval 1.16 to 1.57) and IV and V (1.34, 1.17 to 1.55) and largely explained by differences in obesity, systolic blood pressure, and lung function. Mortality rates from coronary heart disease, stroke, and respiratory disease were nearly 60%, 50%, and 100% higher, respectively, in occupational class IV and V but not significantly increased for all cancers, smoking related cancers, non-smoking related cancers, or breast cancer. Compared with normal weight women in class I and II, age adjusted mortality rates were increased in obese women and were highest in severely obese women in class IV and V (relative rate 2.40, 1.78 to 3.23). Among women of normal weight, all cause mortality rates were not significantly increased in women in the lower occupational classes.

Bias, confounding, and other reasons for caution

The women's weight may have changed in the follow-up period, so some women with a normal weight at recruitment may have become overweight or obese, or vice versa.

Generalisability to other populations

The findings should be generalisable to other similar populations of the time but, as the participants were almost exclusively white, not necessarily to other ethnic groups or mixed populations.

Study funding/potential competing interests

CLH and LG were funded by NHS Health Scotland and GW by the University of Glasgow. We have no competing interests.

Predicting risk of osteoporotic and hip fracture in the United Kingdom: prospective independent and external validation of QFractureScores

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- Research: Predicting risk of osteoporotic fracture in men and women in England and Wales: prospective derivation and validation of QfractureScores (*BMJ* 2009;339:b4229)
- Prognosis and prognostic research: validating a prognostic model (*BMJ* 2009;338:b605)

STUDY QUESTION Are QFractureScores useful for predicting the 10 year risk of osteoporotic and hip fracture in the United Kingdom?

SUMMARY ANSWER QFractureScores are useful tools for identifying patients at risk of osteoporotic and hip fracture in the United Kingdom.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS International guidelines propose a targeted approach for identifying patients at high risk of fracture who are likely to benefit from interventions based on a 10 year absolute fracture risk. QFractureScores were developed and internally validated using a large cohort of UK patients and published in 2009. The performance data from this independent evaluation for both risk prediction models, especially for the hip fracture score, suggest that the QFractureScores could be useful in identifying patients in the United Kingdom who are at increased risk of osteoporotic fracture who could benefit from interventions.

Participants and setting

364 UK general practices contributing to The Health Improvement Network (THIN) database, totalling 2.2 million patients (13 million person years, 25 208 osteoporotic fractures and 12 188 hip fractures) aged 30-85 years and registered with a practice between 27 June 1994 and 30 June 2008.

Design

Prospective cohort study to validate two risk scores for osteoporotic and hip fracture.

Main results and the role of chance

Results from this independent and external validation of QFractureScores indicated good performance data for both osteoporotic and hip fracture end points. Discrimination and calibration statistics were comparable to those reported in the internal validation of QFractureScores. The hip fracture score had better performance data for both women and men. It explained 63% of the variation in women and 60% of the variation in men, with areas under the receiver operating characteristic curve of 0.89 and 0.86, respectively. The risk score for osteoporotic fracture explained 49% of the variation in women and 38% of the variation in men, with corresponding areas under the receiver operating characteristic curve of 0.82 and 0.74. Both QFractureScores were well calibrated, with predicted risks closely matching those across all 10ths of risk and for all age groups.

Bias, confounding, and other reasons for caution

Missing data were noticeably high for alcohol consumption. We therefore used multiple imputation with five multiple imputed datasets to handle missing data for key risk factors with missing data, notably alcohol consumption, smoking status, and body mass index. Omitting patients with missing data should be avoided as it could result in biased performance data.

Study funding/potential competing interests

This research received no specific grant from any funding agency in the public, commercial, or not for profit sectors.

OBSERVED AND PREDICTED 10 YEAR RISK OF FRACTURE BY AGE GROUP AND SEX