

perspectives

NUTRITION NEWS AND VIEWS

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Evidence-based nutrition vs evidence-based medicine *by Jim Mann**



Whether derived from religious or health beliefs, dietary advice has frequently been problematic. In many cases promised health outcomes have had little or no basis in science. However there is now an appreciable body of evidence to suggest that nutrition is a key determinant of several chronic diseases which have reached global epidemic proportions.

KEY POINTS

- Evidence-based recommendations for nutritional management of diseases can be determined using the GRADE or similar approaches. Clearly specified criteria are needed when surrogates are the endpoints for RCTs versus clinical events.
- The WCRF approach is appropriate when developing evidence-based nutrition guidelines for disease prevention.
- The WCRF approach has been adapted to produce wide ranging guidelines for nutrition policy, though such policy is likely to be strongly influenced by political expediency⁽¹²⁾.

Recommendations and guidelines aimed at disease prevention and nutrition therapy should be evidence-based as for other preventative and therapeutic measures. Standardised procedures (Table 1) developed by national and international organisations were principally for generation of evidence-based recommendations for drug treatments and other clinical approaches. Typically randomised controlled trials (RCTs) or meta-analyses of RCTs have been considered as being of sufficient quality to generate strong recommendations. The extent to which this is appropriate for evidence-based nutrition recommendations is considered briefly here.

TABLE 1: GRADING AND RECOMMENDATION PROCEDURES

- The Scottish Intercollegiate Guidelines Network (SIGN) www.sign.ac.uk
- National Institute for Clinical Excellence (NICE) www.nice.org.uk
- Grading of Recommendations, Assessment, Development and Evaluation (GRADE) www.gradeworkinggroup.org/

NUTRITIONAL MANAGEMENT OF DISEASE STATES

In considering the nutritional management of disease states, to some extent the same principles may be applied as those to develop guidelines on a drug treatment or surgical procedure. One such example is the effect of vitamin D and calcium on bone health where fractures and bone mineral density might be regarded as appropriate outcomes of randomised controlled trials. The consistently positive results of RCTs examining the effects of vitamin D justify strong recommendations for its use, at least in some population groups⁽¹⁾.

However, many situations with food and nutrients are less straightforward. A large body of RCTs has demonstrated the potential of dietary attributes, notably dietary fatty acid profile and sodium, to favourably influence LDL cholesterol and blood pressure respectively: two powerful risk factors for cardiovascular disease. There is also some confirmatory evidence from dietary trials with clinical endpoints published in the past several decades that reducing intake of saturated fatty acids and increasing polyunsaturated oils, especially in the context of a diet rich in vegetables, fruits and wholegrain cereals, can reduce cardiovascular events and death in the context of primary or secondary prevention^(see 2).

Most of these trials were underpowered and did not fulfil the requirements now required of quality RCTs. Nevertheless, when considered in conjunction with confirmatory findings from observational epidemiological studies, it would seem reasonable to make recommendations regarding the nature of dietary fat in relation to its potential to reduce the risk of a first or subsequent cardiovascular event^(2,3).

Given the cost and other difficulties inherent in undertaking dietary interventions in RCTs sufficiently powered to study major clinical endpoints and death, when might it be reasonable to base recommendations for disease management on studies with surrogate endpoints or risk factors?

There has been insufficient public debate on this issue.

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EDITORIAL



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Nutrition recommendations for public consumption by Janelle Gifford

Assessing nutrition evidence using a similar process as drug and other clinical approaches may not be appropriate for nutrition recommendations (see article by Jim Mann). Methodology for an evidence-base approach for nutrition recommendations, is now further defined, however the development and implementation of national nutrition guidelines, aimed to promote health and well-being and reduce the risk of diet-related conditions and chronic disease⁽¹⁾ is still very complex.

At the time of writing this editorial, the preliminary draft Australian Dietary Guidelines and Food Modelling System had already attracted some critical comment^(2,3) despite being undertaken based on NHMRC and American Dietetic Association processes⁽⁴⁾. In the first year following the release of the US dietary guidelines, there have also been questions raised, for example, over the added sugar guideline⁽⁵⁾ and “which foods Americans should eat less of”⁽⁶⁾. The latter sparked legal action against the USDA⁽⁶⁾. The US dietary guidelines were also undertaken with documented procedure and systematic analysis of the literature⁽⁷⁾.

Despite the high level debate on what recommendations should be or how they are arrived at, the fact remains that a high proportion of Australians, both adult and adolescent and specific groups (e.g. low socioeconomic status), may fail to follow them anyway^(8,9).

Notably for adolescents, particularly girls, calcium intake remains inadequate at a time of life that is critical for bone accretion (see Weaver article) although there have been recommendations on dairy and calcium for this group. While dairy intake is currently the main source of calcium, fortification of foods leads to a greater selection of food groups to draw from (see Weaver article). This may be beneficial in the case of calcium particularly if calcium bioavailability is tested and proven to be high. Would children be willing to eat fortified foods that have reasonable bioavailability e.g. tofu, and/or would dietitians be willing to recommend others e.g. juice or low fat ice cream?^(10,11) Or can dairy food be more attractively ‘rebadged’ – milk, for example, has been touted as a new sports drink⁽¹²⁾ with its hydrating properties⁽¹³⁾ and protein for recovery and muscle accretion⁽¹⁴⁾.

Although debate about recommendations is certainly worthwhile, health professionals now have the chance to promote them and target groups in potentially unique ways. Rodriguez says each new release of dietary guidelines is an opportunity to ‘regrab’ the attention of different populations with targeted goals⁽¹⁵⁾. When the Australian Dietary Guidelines based on systematic review of the evidence are released, will we regrab the Australian public and support change of dietary behaviour in new and positive ways?

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References

1. NHMRC 2011. Review of the dietary guidelines. Available at <http://www.nhmrc.gov.au/your-health/nutrition/review-dietary-guidelines>.
2. Dayton L 2011. A spoonful of sugar is not so bad. Available at <http://www.theaustralian.com.au/news/health-science/a-spoonful-of-sugar-is-not-so-bad/story-e6frg8y6-1226090126776>.
3. Creswell A 2010. Green diet push angers experts. Available at <http://www.theaustralian.com.au/news/green-diet-push-angers-experts/story-e6frg6n6-1225894792847>.
4. Williams P et al. A review of the evidence to address targeted questions to inform the revision of the Australian dietary guidelines 2009: Process Manual. Dietitians Association of Australia, 2011. Available at www.daa.asn.au.Stanhope KL et al. *Am J Clin Nutr* 2011; 94:112-9.
5. Stanhope KL et al *Am J Clin Nutr* 2011; 94:112-9.
6. Zimmerman R 2011. Lawsuit Says New USDA Dietary Guidelines Are Deceptive. Available at <http://www.medscape.com/viewarticle/738734?ssdmh=dm1.671776&src=nldn>.
7. Spahn JM et al. *J Am Diet Assoc* 2011; 111:520-3.
8. McNaughton SA et al. *J Nutr* 2008; 138: 86-93.
9. Golley RK et al. *J Nutr* 2011; 141:1340-7.
10. Van der Hee RM et al. *J Am Diet Assoc* 2009; 109:830-835.
11. Ferrar L et al. *Osteoporos Int* 2010 Dec 18 [Epub ahead of print].
12. Roy BD. *J Int Soc Sports Nutr* 2008; 5:15 doi:10.1186/1550-2783-5-15. Available from: <http://www.jissn.com/content/5/1/15>.
13. Watson et al. *EJAP* 2008; 104:633-642.
14. Josse AR et al. *Med Sci Sports Ex* 2010; 42:1122-1130.
15. Rodriguez JC. *J Am Diet Assoc* 2011; 111:499.

How can calcium status be optimised? by Connie Weaver*



Calcium is essential for all life, and particularly important for musculoskeletal and nerve function. Population intakes across the world often fall short of current recommendations⁽¹⁾. How can calcium status be optimised?

Data from children's nutrition surveys in Australia and New Zealand show that adolescent intake may be inadequate especially for girls (~800mg/day)^(2,3) at a time when bone calcium accretion increases markedly⁽⁴⁾. Alarming, 82–89% of 12–16 year old Australian girls did not meet the Estimated Average Requirements. Inadequate consumption of dietary calcium may also occur in adults around 50 years and over⁽⁵⁾ when risk of injury increases.

FOOD SOURCES OF CALCIUM

Calcium consumption is usually directly related to dairy intake. Milk and dairy products (milk and milk products, cheese and frozen milk products) may provide about 50–66% of calcium intake⁽⁶⁾. The poor intake of calcium in Australian adolescent girls may reflect a decline in consumption of milk in favour of sweetened beverages⁽²⁾.

In addition to milk, yoghurt, custard and cheese, other foods that contain reasonable amounts of calcium in Australia/New Zealand include salmon (with bones), almonds, bok choy and silverbeet, some legumes, tofu (if set with calcium sulphate) and fortified bread, juice, and some ice creams⁽⁷⁾. Extensive fortification in the US has increased the diversity of calcium sources and has potential to boost intake, although milk and milk products remain the primary source (see Table 3).

KEY POINTS

- Calcium intake is inadequate in key population groups such as adolescent girls and older adults.
- Absorption efficiency is best if consumed in divided doses throughout the day in meals and snacks.
- Calcium bioavailability is influenced by the presence of inhibitors and enhancers of calcium absorption in the food or meal.

TABLE 3: COMPARING SOURCES FOR ABSORBABLE CALCIUM*

	Amount/ Portion (g)	Calcium Content/Portion (mg)	Estimated Absorption Efficiency [‡] (%)	Absorbable Calcium/Portion [^] (mg)	Portions needed to = 1cup milk [#]
SOURCE					
Milk	240	300	32.1	96.3	1.0
Beans, red	172	40.5	24.4	9.9	9.7
Bok choy	85	79	53.8	42.5	2.3
Broccoli	71	35	61.3	21.5	4.5
Cheddar cheese	42	303	32.1	97.2	1.0
Chinese cabbage flower leaves	85	239	39.6	94.7	1.0
Chinese mustard green	85	212	40.2	85.3	1.1
Spinach	85	115	5.1	5.9	16.3
Sweet potatoes	164	44	22.2	9.8	9.8
Rhubarb	120	174	8.54	10.1	9.5
Whole wheat bread	28	20	82.0	16.6	5.8
Wheat bran cereal	28	20	38.0	7.54	12.8
Yoghurt	240	300	32.1	96.3	1.0
FORTIFIED FOODS					
Tofu, calcium set	126	258	31.0	80.0	1.2
Orange juice with calcium citrate malate	240	300	36.3	109	0.88
Soy milk with tricalcium phosphate	240	300	24	72	1.3
Bread with calcium sulfate	16.8	300	43.0	129	0.74

*Modified from Weaver and Heaney⁽⁸⁾; [‡]adjusted for load using the equation for milk (fractional absorption = 0.889-0.0964 In load⁽⁹⁾) then adjusting for the ratio of calcium absorption of the test food relative to milk tested at the same load, the absorptive index; [^]calculated as calcium content x fractional absorption; [#]US cup size = 237mL

CALCIUM ABSORPTION AND BIOAVAILABILITY

Calcium availability is a function of the efficiency of absorption (affected by load), and enhancers or inhibitors of absorption present in the food matrix.

Calcium absorption efficiency decreases with increasing intake, however, total calcium absorbed increases with load. This means that calcium absorption efficiency is best if consumed in divided doses throughout the day in meals and snacks.

Once load is accounted for, enhancers and inhibitors of calcium absorption can exert their effects by changing calcium solubility and availability to enterocytes within the gut. Proteins like casein phosphopeptides may solubilise calcium, but the modest effect may only benefit those with poor calcium absorption efficiency⁽¹⁰⁾. Bacteria ferment the fibre of non-digestible oligosaccharides and produce volatile fatty acids and lactic acid that may solubilise calcium and stimulate absorption in the lower gut.

Oxalic acid in foods (e.g. spinach) binds with the calcium to form an insoluble salt and inhibits absorption. Some vegetables have calcium but a lower oxalate level (like the Brassica family), whilst others, like soybeans, have a food matrix which neutralises the effect of oxalate; thus these vegetables have a higher calcium bioavailability. Phytic acid is a less potent inhibitor and is present in seeds as the storage form of phosphorus. Only foods that are very high in phytic acid like high phytate bran cereal have an appreciable effect on calcium absorption.

Vegetables with calcium that are low in both oxalate and phytate may have calcium absorption efficiencies that exceed that of milk, like broccoli and bok choy, but most of these do not have enough calcium to reach the amount of absorbable calcium as milk in one serving.

TO TAKE HOME....

It is imperative that calcium delivery in the food supply and advice on consumption works to optimise calcium status. Frequency of consumption, load and bioavailability are key ingredients in this discussion.

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**This article has been completed with the assistance of the Editor.*

References

1. Weaver CM. *JADA* 2009;109:812-813.
2. Commonwealth Scientific Industrial Research Organisation (CSIRO) Preventative Health National Research Flagship, and the University of South Australia, 2008. Australian National Children's Nutrition and Physical Activity. Available at [http://www.health.gov.au/internet/main/publishing.nsf/content/66596E8FC68FD1A3CA2574D50027DB86/\\$File/childrens-nut-phys-survey.pdf](http://www.health.gov.au/internet/main/publishing.nsf/content/66596E8FC68FD1A3CA2574D50027DB86/$File/childrens-nut-phys-survey.pdf)
3. Ministry of Health. NZ Food NZ Children: Key results of the 2002 National Children's Nutrition Survey. Ministry of Health 2003. Available at [http://www.moh.govt.nz/moh.nsf/0/664234A7283A0478CC256DD60000AB4C/\\$File/nzfoodnzchildren.pdf](http://www.moh.govt.nz/moh.nsf/0/664234A7283A0478CC256DD60000AB4C/$File/nzfoodnzchildren.pdf)
4. FAO/WHO. Human vitamin and mineral requirements. Report of a joint FAO/WHO expert consultation, Bangkok, Thailand. FAO 2001. Available at <http://www.fao.org/docrep/004/y2809E/y2809e000.HTM>
5. Bonthuis M et al. *EJCN* 2010; 64: 569–577.
6. McLennan W et al. National Nutrition Survey Nutrient Intakes and Physical Measurements Australia 1995. Commonwealth of Australia 1998. Available at [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/CA25687100069892CA25688900268A6D/\\$File/4805_0_1995.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/CA25687100069892CA25688900268A6D/$File/4805_0_1995.pdf)
7. Food Standards Australia and New Zealand (FSANZ). NUTTAB 2010 Online Searchable Database. FSANZ 2011. Available at <http://www.foodstandards.gov.au/consumerinformation/nuttab2010/nuttab2010online searchabledatabase/onlineversion.cfm>
8. Weaver CM and Heaney RP. Food Sources, Supplements, and Bioavailability. In: Calcium in Human Health, Human Press Inc, Totowa, NJ, 2006.
9. Heaney RP et al. *J Bone Miner Res* 1990; 5: 1135–1138.
10. Heaney R et al. *J Bone Miner Met* 1994; 12: 77–81.

Unilever Sustainable Living Plan by Karen Hamilton*



In 2010, Unilever launched its Sustainable Living Plan⁽¹⁾ which aims to “help everyone enjoy a good quality of life while respecting the planet”⁽²⁾. The plan recognises the need for balance of economic, social, and environmental sustainability⁽³⁾.

Unilever believes there is no conflict between sustainability and profitable growth and that developing new ways of doing business that increase positive social impact whilst reducing environmental impact is good for business⁽¹⁾. Three Goals have been set to achieve by 2020⁽¹⁾ and are highlighted here (Figure 1 shows the Australia and New Zealand framework for these).

Supporting the three goals are 50 social, economic and environmental targets ranging from salt reduction in soup to using renewable energy in factories. The Australian and New Zealand Unilever business will focus on 26 of the 50 global targets of the Sustainability Living Plan and will be progressively implementing these from this year. To achieve these targets Unilever needs to work in partnership with governments, NGOs, suppliers, customers and consumers to address the challenges which confront us all in working towards a sustainable future.

HEALTH AND WELLBEING

The Plan aims to help more than a billion people take action to improve their health and wellbeing by 2020 (Goal 1) through supporting hygiene habits and nutritious food choices to help reduce diarrhoea and the lifestyle diseases, obesity and cardiovascular disease⁽¹⁾. The nutrition component aims to increase the percentage of products which meet the highest nutritional standards, based on globally recognised population dietary guidelines for salt, sugar, saturated and trans fat⁽¹⁾.

Implementation of population dietary changes like these, would lead to large shifts in food choice as well as reduce premature deaths^(see 4).

Calculations of the environmental impact of such diets are now increasingly being discussed, partly because it may provide the consumer with an additional argument to choose a healthy diet.

The Australia and New Zealand framework covers six nutrition areas (see Figure 1). Locally Unilever has already achieved reductions in

- salt (removal of more than 250 tonnes from the spreads range in the 1990's);
- sugar (7% sugar reduction in Lipton Ice Tea™ in 2003 and 30% in Lipton Green Ice Tea™ in 2010 and 380 tonnes from Streets™ ice creams in 2004); and
- saturated and trans fats (removal of 3,000 tonnes of trans fat from the spreads range in the 1990's and 595 tonnes of saturated fat from the Continental™ and Streets™ ice cream ranges since 2001).

ENVIRONMENTAL IMPACT

Consumers are increasingly inspired by sustainable options that provide a personal benefit, such as health, in addition to reducing environmental impact^(5,6). Reasons for choosing one food over another are not only driven by nutrition and taste, but also by considerations as to how, where and by whom particular foods were grown, processed, and transported. Meals similar in caloric content may differ by a factor of 2 to 9 in greenhouse gas (GHG) emissions⁽⁷⁾.

Since the food supply chain is a major contributor to GHG emissions (of which raw materials is the largest component), understanding how to create environment friendly healthy food choices is an important component of The Plan. Unilever measures the environmental impact (GHG, water, waste) of its products over their whole lifecycle from how raw materials are sourced to how consumers use and dispose of its products^{**}. For example, it is estimated that 26% of GHG over 1,600 Unilever products are due to raw material sourcing (see Figure 2).

The reduction of GHG such as carbon emissions has been a key concern in Australasia and is one of The Plan's key strategies to halve the environmental footprint of Unilever's products (Goal 2). To date, despite production increases, Unilever has reduced carbon emissions across its manufacturing operations in Australia and New Zealand by 63.3% per tonne of production and 77.8% in absolute figures since 1995⁽⁹⁾. Unilever continues to support the Australian Government target of a 25% reduction of carbon by 2020⁽¹⁰⁾ against a 2000 baseline.

SUSTAINABLE SOURCING

Changing weather patterns, water scarcity and unsustainable farming practices all affect agricultural productivity⁽⁷⁾. Unilever's third Goal in The Plan is to source 100% of its agricultural raw materials sustainably by 2020. It already works with a number of partners such as the Rainforest Alliance, Fairtrade and the Roundtable for Sustainable Palm Oil to support sustainable agricultural methods.

Black tea is a useful example⁽⁸⁾. Unilever purchases around 12% of the world's black tea supply (the world's largest purchaser). Unilever has committed to purchasing all its tea from sustainable, ethical sources, by 2020 and has asked Rainforest Alliance to certify the farms from which it sources its tea. Rainforest Alliance is an independent NGO that works with communities whose livelihoods depend on the land. Nearly 220,000 smallholders are now working to make tea cultivation more sustainable through this arrangement. A range of improvements may be undertaken by farms to achieve certification, including protective suits for workers dealing with agrochemicals, wastewater treatment equipment and micro hydroelectric schemes.

KEY POINTS

- To achieve these commitments Unilever will need to work in partnership with governments, NGOs, suppliers, customers and consumers.
- Tackling sustainability challenges provides new opportunities for industry to create preference for brands, build business with retail customers, drive innovation, grow markets and generate cost savings.

WHERE TO FROM HERE?

Important environmental and social changes have meant that sustainability issues must be on the agenda for industry, government and consumers. Tackling sustainability challenges in fact provides new opportunities for sustainable growth: creating consumer preference for brands, building business with retail customers, driving innovation, growing markets and generating cost savings.

For further information on Unilever Australia and New Zealand's focus areas and progress to date, please contact Megan Cobcroft at Megan.Cobcroft@unilever.com.

Karen Hamilton is Vice President Global Sustainability at Unilever plc.

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***Editor's note: readers may be interested in accessing interactive tools assessing Unilever's brands and reporting on environmental impact (see <http://www.sustainable-living.unilever.com/our-approach/environmental-impacts/greenhouse-gases> and <http://www.unilever.com/sustainability/charts/>)*

References

1. Unilever, Unilever Sustainable Living Plan, 2010. Available at <http://www.uslp.unilever.com/wp-content/uploads/2010/10/pdf>.
2. Unilever, Unilever Sustainable Living Plan, 2011. Available at <http://www.unilever.com/sustainability/UnileverSustainableLivingPlan/>
3. Unilever, Sustainable Development: Our Commitment, 2011. Available at <http://www.unilever.com.au/sustainability/sustainabledevelopmentreport/OurCommitment/Index.aspx>.

4. Scarborough P et al. *J Epid Comm Hlth* 2010; doi:10.1136/jech.2010.114520.
5. Maibach EW et al. *BMC Publ Hlth* 2010; 10:299-309.
6. Sustainability insights. Consumer research by Clear on request of Unilever. June 2010.
7. Unilever, Sustainable Development Overview 2009: Creating a better future every day. Available at [http://www.unilever.com.au/Images/\\$d_UnileverSDReport170310_amended_tcm72-212972.pdf](http://www.unilever.com.au/Images/$d_UnileverSDReport170310_amended_tcm72-212972.pdf).
8. Unilever, Sustainable Tea, 2011. Available at <http://www.unilever.com/sustainability/environment/agriculture/tea/index.aspx>.
9. Carlsson-Kanyama A. *Food Policy* 1998; 23:277-293.
10. Helm N. Unilever's commitment to a low carbon future. Media release: Sydney, 8 July 2011. Available at <http://www.unilever.com.au/aboutus/mediacentre/pressreleases/Unileverscommitmenttolowcarbonfuture.aspx>.

FIGURE 1: UNILEVER AUSTRALIA AND NEW ZEALAND SUSTAINABLE LIVING PLAN GOALS



FIGURE 2: GREENHOUSE GAS EMISSIONS ACROSS THE LIFECYCLE OF UNILEVER'S FOOD AND PERSONAL CARE PRODUCTS WORLDWIDE



Understanding socioeconomic inequality and health behaviours

by Kylie Ball*



It seems intuitive to arrive at the conclusion that affordability and accessibility of health-promoting services or opportunities drive these associations; however it is important to empirically investigate mechanisms that underpin the links between socioeconomic disadvantage and suboptimal health, as well as examine “deviant cases” to discover why some avoid expected adverse outcomes despite their disadvantaged circumstances.

Socioeconomic position (SEP) refers to an aggregate ranking of a person's access to economic resources (e.g. income) and prestige (rank in social hierarchy e.g. occupational prestige)⁽¹⁾. There are many SEP indicators used in epidemiology, but the consistent links observed between the range of SEP indicator variables and sub-optimal health behaviours and outcomes suggests several independent processes in operation.

POSSIBLE MECHANISMS UNDERPINNING SOCIOECONOMIC INEQUALITY: FRUIT AND VEGETABLE INTAKE

The example of fruit and vegetable consumption helps to illustrate gaps in our understanding of these mechanisms. Inadequate fruit and vegetable consumption (quantity and variety) is a consistent finding in lower SEP children, adolescents and adults in comparison to their higher SEP peers⁽²⁻⁹⁾. Qualitative studies have helped to identify factors that may provide insights into the reasons for these inequalities, but few quantitative studies have attempted to confirm these.

Mechanisms that have been suggested to explain socioeconomic inequalities in diet amongst adults include lower levels of education about food sources of nutrients and lower prioritisation of healthy food purchases⁽¹⁰⁾, lower perceived palatability of fruit and vegetables⁽¹¹⁾, lower perceived salience of nutrition messages⁽¹²⁾, motivation issues or misconceptions about the healthiness of their diet⁽¹³⁾. While perceptions of food availability, accessibility and affordability

predicted socioeconomic variations in women's diets, it is not clear how well these perceptions match the actual environment⁽¹⁴⁾.

THE CONCEPT OF RESILIENCE: OBESITY DEVELOPMENT

Investigating resilience represents a promising approach to addressing modifiable determinants of socioeconomic inequalities in poor health associated with eating and physical activity behaviours. The concept of resilience involves positive adaptation in an environment of adversity⁽¹⁵⁾. In the case of obesity, for example, resilience may refer to the ability to “maintain a healthy weight despite exposure to circumstances that increase the risk of obesity”⁽¹⁶⁾.

Two NHMRC funded programs will help to incorporate factors fostering resilience to obesity in disadvantaged Australian communities⁽¹⁶⁾. The READI (Resilience for Eating and Activity Despite Inequality) study is currently trialling strategies aimed at promoting resilience to unhealthy eating behaviours within disadvantaged women. These interventions include strategies designed to increase dietary self-monitoring, food budgeting, planning and preparation, and to improve perceptions of the affordability of healthy foods. To inform future programs, the Resilience for Eating and Activity in Children (REACH) is a program underway in South Australia to pinpoint intrapersonal, interpersonal and environmental factors within lower SEP communities that drive positive health behaviours in 10-12 year old children.

CONCLUSION

Understanding the underlying causes of sub-optimal health behaviours and outcomes, as well as why some people of lower SEP manage to avoid them is crucial to inform development of policy and health promotion efforts in socioeconomically disadvantaged groups.

Professor Kylie Ball holds a Personal Chair in the School of Exercise and Nutrition Sciences at Deakin University, Melbourne

*This article has been completed with the assistance of the Editor.

References (Kylie Ball article, p6)

1. Krieger N et al. *Ann Rev Public Health* 1997;18:341-378.
2. Rasmussen M et al. *Int J Behav Nutr Physical Activity* 2006;3:22.
3. De Irala-Estevez J et al. *EJCN* 2000;54:706.
4. Dubowitz T et al. *AJCN* 2008;87:1883-1891.
5. Riediger ND et al. *J Am Coll Nutr* 2008; 27:306-313.
6. Billson H et al. *EJCN* 1999; 53, 946-952.
7. Ball K. *Et al. Public Health Nutr* 2004;7:443-452.
8. Giskes K et al. *J Human Nutr & Diet* 2002;15:375-385.
9. Giskes K et al. *Public Health Nutr* 2002;5:663-669.
10. Ball K et al. *Public Health Nutr* 2006;9:623-630.
11. Darmon N et al. *AJCN* 2008;87:1107-1117.
12. Patterson RE et al. *JADA* 2001;101, 37-41.
13. Dibsall LA et al. *Public Health Nutr* 2003;6:159-168.
14. Inglis V et al. *Appetite*, 2005;45: 334-343.
15. Luthar SS et al. *Child Development* 2000;71:543-62.
16. Ball K et al. *Australasian Epidemiol* 2010;17:16-17.

References (Janice Sangster article, p7)

1. Taylor RS et al. *Am J Med* 2004;116:682-692.
2. Jolliffe J et al. *The Cochrane Database of Systematic Reviews* 2001, CD001800(1).
3. Vale MJ et al. *MJA* 2002;176:211-215.
4. Savage PD et al. *Am Heart J* 2000;140:527-533.
5. Brochu M et al. *J Cardiopulm Rehabil* 2000;20:180-188.
6. Bunker S et al. *J Cardiopulmonary Rehab* 1999;19:334-338.
7. Scott IA et al. *MJA* 2003;179:341-345.
8. Butler L 2008. *The efficacy of a pedometer based intervention in increasing physical activity levels in cardiac patients in the community. PhD Thesis University of New South Wales.*
9. Redfern J et al. *MJA* 2007;186:21-25.
10. Yates BC et al. *Rehab Nurs* 2003;28:57-63.
11. Jenkins A et al. *Am J Health Promot* 2009;24:102-117.
12. Eakin EG et al. *Am J Prev Med* 2007;32:419-434.
13. Bravata DM et al. *J Amer Med Assoc* 2007;298:2296-2304.
14. Butler L et al. *J Cardiopulm Rehabil Prev* 2009;29:105-114.
15. Furber S et al. *Patient Educ Couns* 2009.
16. Redfern J et al. *Heart published online 18 September 2008.*
17. Vale MJ et al. *Arch Intern Med* 2003;163:2775-2783.
18. Sangster J et al. *BMC Cardiovascular Disorders* 2010; 10:17-24.

KEY POINTS

- There is a consistent link between socioeconomic position and poor diet and obesity.
- The mechanisms underlying these links are poorly understood.
- Resilient individuals that do not develop adverse health behaviours and outcomes may provide clues to intervention.

Cardiac rehabilitation with PANACHE by Janice Sangster*



Cardiac rehabilitation (CR) for people with cardiovascular disease (CVD) is beneficial^(1,2), but some participants do not achieve desired outcomes⁽³⁻⁵⁾ and a worrying 70-80% simply do not attend⁽⁶⁻⁸⁾. Those that do not attend are more likely to be at higher risk⁽⁹⁾ and to live further away from a service⁽¹⁰⁾.

The failure of our current CR programs to address this gap demands a rethink of traditional approaches.

HOW CAN MORE CARDIAC REHABILITATION PATIENTS BE REACHED?

Alternative approaches need to be flexible and to meet the needs of participants who are likely to be overweight, inactive and potentially live some distance from services. Accessibility can be improved by using delivery modes including print, internet or telephone⁽¹¹⁾.

Increased physical activity levels⁽¹¹⁾ and positive dietary changes⁽¹²⁾ have been achieved using telephone-based interventions, however a combination of methods is likely to be most effective⁽¹¹⁻¹³⁾. Few studies have been conducted in Australian patients with CVD, but telephone interventions with pedometers^(14,15) have increased physical activity and other telephone-based coaching programs have achieved weight loss^(16,17).

THE PANACHE STUDY: A RANDOMISED CONTROLLED TRIAL

The PANACHE (Physical Activity, Nutrition And Cardiac HHealth) Study is a randomised controlled trial using a telephone-based lifestyle intervention delivering coaching sessions on weight, nutrition and high-volume physical activity⁽¹⁸⁾. The study (Figure 3) will compare the outcomes of healthy weight coaching (intervention) versus physical activity coaching (control) delivered by telephone. It will test the effectiveness of the previously successful physical activity intervention^(8,15) in different settings as well as determine whether this type of intervention is cost-effective and sustainable in rural and urban environments.

The intervention group will receive four telephone coaching sessions based on social cognitive theory. Calls focus on improving self-efficacy

KEY POINTS

- Most CVD patients needing CR services do not attend.
- Many of those who do not attend are at higher risk and live at distance from services.
- The PANACHE Study is a randomised controlled trial using a telephone-based lifestyle intervention aimed at achieving weight reduction and increasing physical activity in CVD patients in rural and urban areas.

and include individualised planning/goal setting sessions on weight, nutrition and physical activity. Participants also receive written materials, a pedometer and lifestyle calendar by mail, and are taught how to self-monitor food intake and activity. The control group will receive two telephone coaching sessions on physical activity as well as a pedometer and step-recording calendar.

Outcomes include self-reported weight (primary), physical activity minutes, time spent in inactivity, and nutrition habits (secondary). We expect results to be available towards the end of 2012.

IMPLICATIONS OF FINDINGS

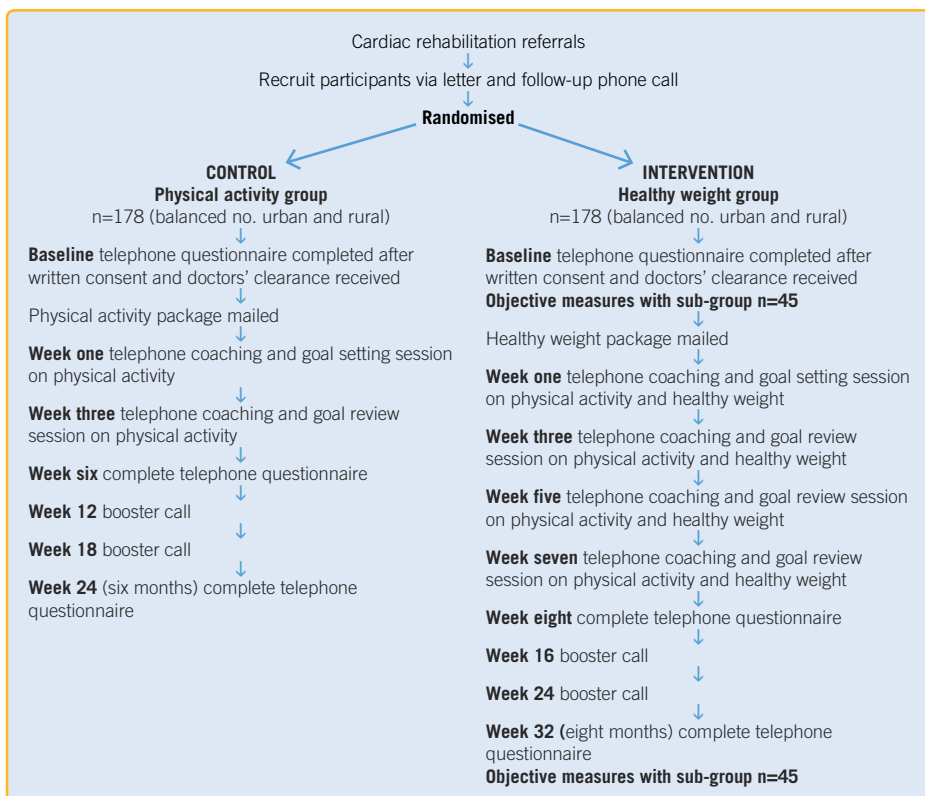
Participation in traditional CR programs is low and the majority of people with CVD are missing out on the benefits of lifestyle modification programs. The PANACHE study addresses this gap by testing an alternative delivery mode for CR and by targeting people who may not attend a CR program.

We hope the findings of this study will provide insight into how we can improve the health outcomes of and accessibility to CR programs in a cost-effective way, particularly for rural and remote people with CVD.

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**This article has been completed with the assistance of the Editor. References (see p6)*

FIGURE 3: PANACHE STUDY PROTOCOL ⁽¹⁸⁾



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It would seem appropriate to include studies with surrogate endpoints when the risk factor or surrogate has been convincingly identified in a cohort study, there is confirmatory evidence from another study type or by a means other than diet, and modifying the factor could confer benefit in terms of morbidity and mortality. There should also be confidence that the dietary intervention would not cause harm. Dietary management of raised blood pressure, by substantial sodium restriction or by wider ranging dietary changes⁽⁴⁾, is an example.

NUTRITION IN THE PREVENTION OF DISEASE

Many chronic diseases, notably cancers, may develop over decades and it is clearly not feasible to undertake RCTs to determine whether dietary measures can reduce risk. The World Cancer Research Fund (WCRF) has developed a set of criteria for categorising associations between lifestyle variables and cancer (see Table 2) which do not rely principally on RCTs. Convincing and probable associations are considered to be of sufficient strength to translate into recommendations for action. The same approach has been used by the WHO in the landmark TR916 (Diet, Nutrition and the prevention of chronic diseases)⁽³⁾. However, for consistency WHO now requires that the GRADE approaches be used for all recommendations, including those for nutrition.

NUTRITION AND PUBLIC POLICY

Developing public policy regarding nutrition presents great challenges. Controversies regarding policies aimed at reducing neural tube defects (NTDs) by folic acid fortification by legislative measures serve as examples.

RCTs have conclusively demonstrated the potential of folic acid supplementation to prevent most NTDs when taken by women planning a pregnancy. Most national authorities recommend supplementation either for women planning a pregnancy or for all women of childbearing age, with or without additional advice to increase intake of dietary folate⁽⁶⁾. The possibility of unplanned pregnancy has also led to widespread advocacy for a population strategy to reduce NTDs. Mandatory fortification of cereal grains and flour was introduced in the United States of America and Canada in 1998 and the consequences in terms of reducing NTDs are impressive. In Canada the prevalence of NTD almost halved with full fortification (0.86 per 1,000 births) compared with the period before fortification (1.56 per 1,000 births)⁽⁶⁾.

Such an approach assumes that the benefits will outweigh possible risks. There were early concerns regarding the possibility of masking pernicious anaemia through folic acid fortification, and that the anticonvulsant effect of some epilepsy drugs might be reduced. Recently mechanistic and epidemiological evidence suggest that folic acid might increase the risk of cancer. The data are immensely difficult, even for the 'experts' to disentangle, since folic acid may protect against cancer initiation but also promote progression in those with polyps and subclinical cancers, common in many populations⁽⁸⁾. Other suggested benefits of fortification have been cardiovascular risk reduction and improved cognitive function in the elderly, however the data are equivocal^(9,10).

The ultimate decision making process is a political one and it is intriguing to note that while Australia has gone ahead, for example, with a mandate for fortification without any important new evidence, a government of different political hue in New Zealand revoked a decision to proceed with mandatory fortification made some months earlier by its predecessor and has delayed the final decision⁽¹¹⁾.

When attempting to decide on a recommendation, there is no alternative to the traditional approach: the corporate wisdom of the expert committee and whatever the decision, ongoing monitoring of the intervention or lack thereof.

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**This article has been completed with the assistance of the Editor.*

References

1. Jackson RD et al. *N Engl J Med* 2006; 354:669-683.
2. Mann JI et al, 2007. In: Mann JI et al (ed.) *The Essentials of Human Nutrition*. Third ed. pp282-312.
3. WHO/FAO. *Diet, nutrition and the prevention of chronic diseases*. Geneva: World Health Organisation; 2003. WHO Technical Report Series 916.
4. Sacks FM et al. *N Engl J Med* 2001; 344:3-10.
5. Mann JI. *Ann Med* 2010; 42:475-486.
6. Lawrence MA et al. *Nutr Rev* 2009; 67 Suppl 1:573-78.
7. de Wals P et al. *Birth defects Res A Clin Mol Teratol* 2008; 82:622-626
8. Smith AD et al. *Am J Clin Nutr* 2008; 87:517-533.
9. Clarke R et al. *Arch Int Med* 2010; 170: 1622-1631.
10. Wald DS et al. *Am J Med* 2010; 123: 522-527.11.
11. NZFSA. *Proposed Amendment to the New Zealand Folic Acid Standard*. NZFSA Public Discussion Paper 2009.
12. World Cancer Research Fund, 2007. *Food, nutrition, physical activity, and the prevention of cancer: a global perspective*. American Institute for Cancer Research/World Cancer Research Fund

TABLE 2: CRITERIA FOR CATEGORISING ASSOCIATIONS BETWEEN LIFE-STYLE VARIABLES AND CANCER AS DEFINED BY THE WORLD CANCER RESEARCH FUND⁽⁵⁾

Convincing	Probable
Evidence from more than one study type and at least two cohort studies	Evidence from at least two cohort studies or five case-control studies
No substantial unexplained heterogeneity, random or systematic error, confounding, measurement error, and selection bias excluded	No substantial unexplained heterogeneity, random or systematic error, confounding, measurement error, and selection bias excluded
Plausible biological gradient	Biological plausibility
Confirmatory experimental evidence	

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