A rapid review of evidence

Beyond overweight and obesity: HEAL targets for overweight and obesity and the six HEAL objectives
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This is an executive summary of an evidence review commissioned by the Centre for Population Health, NSW Ministry of Health, and brokered by the Sax Institute for The Australian Prevention Partnership Centre.

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Executive summary

This rapid review examined the broader health and other outcomes, beyond overweight and obesity, likely to accrue as a consequence of implementation of the NSW Healthy Eating Active Living Strategy 2013–2018. Specific questions were to:

- Identify the additional health conditions and wellbeing indicators (beyond overweight and obesity) where there is strong evidence that meeting the HEAL targets for overweight and obesity and six objectives will improve outcomes
- Provide information on the level of change in the targets and HEAL objectives that are associated with better outcomes for the health conditions and wellbeing indicators. The review was based on evidence retrieved from the main databases of biomedical and health economic peer-reviewed literature from January 2000 to current, supplemented with relevant local and international reports.

The review found:

1. Considerably less research has been conducted into the impact of overweight and obesity and associated health behaviours among children and adolescents compared with adults; nonetheless improved outcomes would occur for metabolic risk factors, dental health, pre-hypertension/hypertension, cardiovascular disease risk factors, depression, rates of mortality in hospitalised children, bullying and otitis media.

2. A substantial number of direct and indirect health and other outcomes may occur as a result of stabilisation and/or reduction of the prevalence of overweight and obesity among adults. Non-health benefit areas include disability payments, absenteeism, worker productivity, workplace injuries, health care costs and insurance claims (see ‘Findings at a glance’, next page).

3. A wide range of additional benefits may occur as a result of meeting HEAL objectives 1–5. The review found: a relatively limited amount of evidence for reducing intake of energy-dense, nutrient-poor food [EDNP]; substantial evidence linking increased consumption of fruit and vegetables to a large number of reduced morbidities and mortality (although not to weight status); a large body of evidence linking the intake of sugar-sweetened beverages to a number of health outcomes, including type 2 diabetes, pancreatic cancer, coronary heart disease, stroke and hypertension; and an abundance of evidence supporting health and other outcomes from increased physical activity and reduced sedentary behaviours (see ‘Findings at a glance’).

4. There is a paucity of systematic review evidence linking community awareness (HEAL Objective 6) directly to outcomes beyond health behaviours and their antecedents. Conducting such a review across the domains of physical activity, healthy eating and obesity would be very worthwhile, but the detailed additional analysis required was outside the scope of the current review. Selected population datasets that show community awareness levels are presented.

5. Estimation of lives saved and diseases prevented through addressing the HEAL strategy objectives suggest that every year in NSW, for five chosen case study examples alone, the following would be prevented:
   - 37 cases of colorectal cancer (through increased physical activity)
   - 1003 cases of coronary heart disease (through improved vegetable consumption) and 422 cases of coronary heart disease (through improved fruit consumption)
   - 510 cases of type 2 diabetes (through reduced sugar-sweetened beverage consumption)
   - 266 cases of type 2 diabetes in men and 200 cases in women (through a 5% reduction in overweight)
   - 185 cases of type 2 diabetes in men and 186 cases in women (through a 5% reduction in obesity)
   - 366 deaths from all causes (through reduced sedentary behaviour).
6. Although evidence regarding the effectiveness of the inter-sectoral approach to achieving changes in overweight and obesity is only beginning to emerge, this approach is strongly supported by prevailing global expert opinion. The impact of achieving the HEAL targets for overweight and obesity as well as other direct and indirect health and non-health impacts is likely to be substantial. In addition, although not additive, the impacts are likely to be cumulative.

Review findings at a glance

Meeting HEAL Target [1] – reduce overweight and obesity rates of children and young people (5–16 years)

Considerably less research has been conducted into the health impact of reducing overweight and obesity among children and adolescents compared with adults. Nevertheless, the findings indicate that reducing the prevalence of overweight and obesity among children and adolescents will result in additional benefits in the following areas:

- Metabolic risk factors in children
- Dental health
- Pre-hypertension and hypertension
- Cardiovascular disease risk factors
- Depression
- Higher mortality in hospitalised children
- Bullying
- Otitis media.

Meeting HEAL Target [2] – stabilise and then reduce overweight and obesity rates in adults

A substantial number of improvements in direct and indirect health and other outcomes were identified as accruing as a result of stabilisation and/or reduction of the prevalence of overweight and obesity. These include:

- Type 2 diabetes
- All-cause mortality
- Endometrial cancer
- Second primary breast and colorectal cancers
- Gastric cancer
- Lumbar radicular pain and sciatica
- Cataracts
- Biliary tract disease
- Osteoarthritis (knees)
- Quality of life
- Prostate cancer
- Colorectal cancer survival
- Cardiovascular disease
- Renal cell cancer
- Bladder cancer
- Thyroid cancer
- Infant death.

Non-health outcomes that may be improved through reductions in overweight and obesity include:

- Disability payments
- Absenteeism
- Productivity
- Workplace injuries
- Health care costs
- Insurance claims.
Meeting HEAL Objective [1] – reduce intake of energy-dense nutrient-poor (EDNP) food and drinks

The review found a limited amount of evidence relating reduced intake of energy-dense, nutrient-poor food to health and other outcomes, including and beyond overweight and obesity. Much of the literature is centred on the effects of specific nutrients that are likely to be high in EDNP foods – but such studies were excluded from this review as they were too extensive and complicated in their findings. Nevertheless, a number of studies indicated that reducing consumption of EDNP foods would be associated with improved outcomes in the following areas:

- Metabolic syndrome
- Type 2 diabetes
- Renal cell carcinoma
- Coronary heart disease mortality
- Prostate cancer
- Stroke.

Meeting HEAL Objective [2] – increase consumption of fruit and vegetables [F&V]

The review found substantial evidence linking increased consumption of F&V to reduced morbidities and mortality, although not weight status. Increased consumption of F&V was associated reduced risk of the following health outcomes:

- All-cause mortality
- Cardiovascular mortality
- Type 2 diabetes
- Gastric cancer
- Colorectal cancer
- Breast cancer
- Oral cancer
- Lung cancer
- Oesophageal cancer
- Endometrial cancer
- Non-Hodgkin’s lymphoma.

Evidence for non-health outcomes was less extensive and related to:

- Health care costs and
- Agricultural sector gains.

Meeting HEAL Objective [3] – increase intake of water in preference to sugar-sweetened drinks

The review found a large body of evidence linking the intake of sugar-sweetened beverages to an increased risk of a number of health outcomes, including:

- Type 2 diabetes
- Pancreatic cancer
- Coronary heart disease
- Gout
- Kidney stones
- Stroke
- Hypertension
- Dental erosion in children.

a. EDNP drinks were not considered within this objective in this review as HEAL Objective 6 relates to sugar-sweetened beverages separately.
Meeting HEAL Objective [4] – increase incidental, moderate and vigorous physical activity

The review found an abundance of evidence supporting health and other outcomes of increased physical activity. The areas in which gains would accrue include the following:

- All-cause mortality
- Health care costs
- Absenteeism
- Cardiovascular mortality
- Life satisfaction
- Stroke
- Sleep duration and quality
- Coronary heart disease
- Self-esteem
- Hypertension
- Body image
- Metabolic syndrome
- Type 2 diabetes
- Asthma
- Hip fractures
- Dementia
- Health-related quality of life
- Cognitive decline
- Lung cancer
- Pancreatic cancer
- Breast cancer
- Colon cancer
- Gastroesophageal cancers
- Renal cancer
- Bladder cancer
- Prostate cancer
- Endometrial cancer
- Preeclampsia
- Gestational diabetes
- Ovarian cancer
- Erectile dysfunction
- Depression
- Anxiety.

Meeting HEAL Objective [5] – reduce time in sedentary behaviours

The review also found that reducing sedentary behaviours would likely address the following health and non-health outcomes:

- All-cause mortality
- Cardiovascular disease and mortality
- Type 2 diabetes
- Colon cancer
- Endometrial cancer
- Lung cancer
- Metabolic syndrome
- Breast cancer
- Ovarian cancer
- Prostate cancer
- Depressive symptoms
- High blood cholesterol
- Hypertension
- Physical fitness
- Academic achievement
- Cognitive performance
- Anti-social behaviour
- Eating habits.
Meeting HEAL Objective [6] – increase community awareness of healthy eating and physical activity as protective factors against chronic disease

The review found a paucity of evidence linking community awareness directly to outcomes beyond health behaviours and their antecedents. No relevant systematic reviews have been published to date in the peer-reviewed literature (‘absence of evidence’ rather than ‘evidence of absence’).

Conducting such a review across the domains of physical activity, healthy eating and obesity, while extensive, would be a very worthwhile undertaking; the detailed additional analysis required for this fell outside the scope of the current review. Nonetheless relevant data on community awareness in NSW are provided.

Estimation of lives saved and diseases prevented annually through a fully implemented HEAL strategy – selected case studies

The measures of association identified in addressing review question 1 (RQ1) were used as inputs to answer RQ2; i.e. to provide measures of the population impact of such changes. Analyses were undertaken to develop estimates of the number of cases of disease or deaths that could be avoided if the HEAL targets and objectives were met.

One outcome was selected for each of the HEAL targets and objectives (excluding community awareness) addressed in RQ1; accordingly, five modelled studies of estimated diseases prevented or lives saved annually were prepared. The modelling from these theoretical case studies suggests that:

• 37 cases of colorectal cancer annually in NSW would be prevented through a 15% reduction in inadequate physical activity

• 1003 cases of coronary heart disease annually in NSW would be prevented through a 25% reduction in insufficient vegetable consumption and 422 cases would be prevented through a 25% reduction in insufficient fruit consumption

• 510 cases of type 2 diabetes annually in NSW would be prevented through a 25% reduction in consumption of sugar-sweetened beverages

• 366 deaths (from all causes) annually in NSW would be prevented through a 25% reduction in the proportion sitting for 10 or more hours a day

• 266 cases of type 2 diabetes in men and 200 cases in women in NSW per year would be prevented by a 5% reduction in overweight, while 185 cases in men and 186 cases in women would be prevented by a 5% reduction in obesity.