Addressing inequities in healthy eating

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‘Fair Foundations: The VicHealth framework for health equity’ was developed by VicHealth under the leadership of author O’Rourke. It was published in 2013. It is a conceptual and planning framework adapted from work done by the WHO Commission on the Social Determinants of Health (Solar and Irwin, 2010). Social determinants of health inequities are depicted as three layers of influence – socioeconomic, political and cultural context; daily living conditions; and individual health-related factors. These determinants and their unequal distribution according to social position, result in differences in health status between population groups that are avoidable and unfair. The layers of influence also provide practical entry points for action (VicHealth, 2013). Fair Foundations can be accessed at www.vichealth.vic.gov.au.

Summary

What, when, where and how much people eat is influenced by a complex mix of factors at societal, community and individual levels. These influences operate both directly through the food system and indirectly through political, economic, social and cultural pathways that cause social stratification and influence the quality of conditions in which people live their lives. These factors are the social determinants of inequities in healthy eating. This paper provides an overview of the current evidence base for addressing these determinants and for the promotion of equity in healthy eating.

Key words: diet, inequalities in health, policy and implementation

INTRODUCTION

A complex mix of factors interact at the societal and individual levels to shape what, when, where and how much people eat. These influences interact across levels, over the life course and between generations.

The most direct influences operate through the food system, where agricultural production, trade, manufacturing, retail, food services and advertising shape what foods are available, where and for what price. These in turn affect people’s knowledge, preferences, purchasing, cooking and consumption behaviors (Wall et al., 2006; Magnus et al., 2009; Friel et al., 2013b; Jensen and Smed, 2013).

Peoples’ diets are also a product of the broader daily living conditions in which they are born, live, learn, work and age. These daily living conditions are in turn shaped by the underlying norms, values, policies, institutions and processes that govern society, and which systematically distribute the determinants of unhealthy eating unequally (Friel, 2009). In many countries, people with less money, less education, insecure working conditions and poor living conditions are more likely to experience food insecurity, eat unhealthy diets and have higher levels of dietary-related diseases (Burns, 2004; Friel, 2009; Pampel et al., 2010; Commonwealth of Australia, 2013).
Addressing these inequities will require a whole-of-society effort involving coordinated action at the societal, community and individual levels (Marmot et al., 2008). Aimed at supporting such an approach, this paper reviews the evidence of actions to address the social determinants of inequities in healthy eating. Its analytical framework is ‘Fair Foundations: The VicHealth framework for health equity’ (VicHealth, 2013), which identifies three layers of influence and entry points for action: socio-economic, political and cultural contexts; daily living conditions and individual health-related factors.

METHODS
A rapid review of the Australian and international English language literature was conducted in three phases in October–November 2013. It involved a comprehensive search strategy including three electronic databases, gray literature and hand searching of relevant journals. The literature search was limited to 2000 and 2013 and used search terms specific to each layer of the Framework (VicHealth, 2013).

First, a pre-defined search strategy was applied to three databases: Web of Knowledge, Campbell Library and Cochrane Library. Health equity search filters are yet to be validated, and equity-related terms have been inconsistently indexed in conventional databases (Welch et al., 2013). Equity-focused literature searches are therefore at a particularly high risk of missing potentially relevant studies. To help address this, a wide range of search terms was identified (see Supplementary Appendix S1). This phase was successful in yielding 49 systematic reviews, non-systematic reviews and primary studies, mainly targeted at the conceptual framework levels of individual health-related behaviors and daily living conditions, and in specific settings (mainly schools and workplaces). It was less useful in identifying evaluations of actions conducted at the socio-economic, political and cultural context level.

More targeted searches were therefore conducted of the Web of Knowledge citation index, Google Scholar, as well as hand-searches of key journals, and of papers and reports. This yielded a further \( n = 115 \) studies.

Finally, a scan of relevant websites was conducted, including those of Australian federal and state government departments, as well as key national and international institutions and research centers, including VicHealth, the UCL Institute for Health Equity, the Rudd Centre for Food Policy and Obesity at Yale University, the Physical Activity, Nutrition and Obesity Research Group (PANORG) at the University of Sydney, the UK National Health Service and Food Standards Agency and the US Centers for Disease Control and Prevention (CDC). An additional 17 studies were identified in this final scan. The total search strategy resulted in a final list of 181 studies.

Searching, abstract screening and data extraction were conducted by two authors of the paper (L.H. and L.F.). All studies were assessed for quality according to strength of study design and data quality, as well as transparency in description of study design and assumptions, and how outcomes were measured. Studies were included if they discussed policies, services and interventions which have been evaluated for their impact (or potential to impact) on inequities in healthy eating. The search focussed on identifying high-quality systematic reviews and reviews of reviews, experimental studies, and policy and program evaluations. When these were not available, modeling studies (including cost–benefit analyses) and observational studies were considered. Theoretical, conceptual and process evaluation papers were excluded. Priority was given to studies conducted in Australia; however, where these were not available, the search was widened to include other high-income countries.

WHAT CAN BE DONE TO ADDRESS THE SOCIAL DETERMINANTS OF INEQUITIES IN HEALTHY EATING

Each of the 181 studies that were included in this review evaluated actions that sought in some way to influence health equity through action in one of the three conceptual levels of the Fair Foundations framework. The studies are now discussed later, organized according to the Fair Foundations levels and are summarized in Table 1. A more detailed description of each study can be found in the Supplementary Appendix S1.

Socio-economic, political and cultural context
Nutrition-specific policy
Policies aimed at influencing the social distribution of healthy eating opportunities and behaviors can be broadly categorized into nutrition-specific and nutrition-sensitive (UNDP, 2013). Nutrition-specific policies aim to directly influence food supply or consumption, and include economic instruments, regulatory controls or food relief schemes targeted at less-advantaged or high-risk groups.

Economic instruments. Health-oriented food taxes have recently been implemented, or are being considered, in several jurisdictions including the UK, Finland, France, Hungary, Mexico and a number of US states but it remains unclear what the impact will be on dietary inequities. In the absence of real-world evaluations, much of the evidence for the impact of taxes on food sales and
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<td>- Employment and labor policy supportive of healthy eating (e.g. flexible work hours, changes in shift-work schedules)</td>
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<td>Improving housing location and quality, including food storage and preparation space</td>
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consumption has been derived from modeling studies. According to this literature, disincentives in the form of unhealthy taxes without concomitant subsidization of healthy foods may be financially regressive because they place a disproportionate burden on those who are socio-economically disadvantaged and spend a greater proportion of their income on the less healthy food (Fry et al., 2013). Therefore, policy packages combining taxes on unhealthy foods with subsidies on healthy foods such as fruits and vegetables are likely to have the greatest positive influence on inequities in healthy eating (Thow et al., 2010; Brambila-Macias et al., 2011; Nicholls et al., 2011; Cabrera Escobar et al., 2013; Ni Mhurchu et al., 2013), with a stronger impact when foods high in fat or salt are taxed, than sugar-sweetened beverages (Eyles et al., 2012; Ni Mhurchu et al., 2013).

Only one study has been published that appraises the actual impact of a taxation policy on food purchasing and consumption behaviors—a short-term evaluation of the Danish fat tax which ran for 15 months between 2011 and 2013. While all food sold in Denmark is already subject to a uniform 25% VAT, an additional tax was levied on foods containing more than 2.3 g saturated fat per 100 g. Preliminary evidence suggests that the tax had a short-term 10–15% reduction on purchases of fats and oils, and increased sales of healthier products, but unhealthy products were substituted with cheaper varieties of the same composition (Jensen and Smed, 2013). Controlled intervention trials involving targeted fruit and vegetable price discounts at point-of-purchase in supermarkets in New Zealand (Ni Mhurchu et al., 2010), France (Bihan et al., 2012), the Netherlands (Waterlander et al., 2013) and Australia (Brimblecombe et al., 2013) have shown some promise in promoting healthier food purchasing in low-income groups.

**Government regulatory controls.** Food advertising. Restricting exposure to advertising of high fat, salt and sugar foods is widely considered to be one of the most cost-effective child obesity prevention approaches available and may contribute to reducing inequities due to the higher exposure and vulnerability of low-income children to marketing (Magnus et al., 2009; Loring and Robertson, 2014). Population-wide controls on unhealthy food marketing through mass media and in public settings where people (and in particular children) spend a large amount of time (such as schools, shopping malls and sports clubs) are likely to have positive impacts across the social hierarchy. However, few examples are available of mandatory regulation of children’s exposure to unhealthy food and beverage marketing. Regulation of broadcast television advertising has been implemented in a few jurisdictions internationally, demonstrating a limited positive impact on reducing overall exposure in Norway, Sweden and Quebec, Canada, and a stronger impact in the UK and South Korea (Galbraith-Emami and Lobstein, 2013). Ideally, restrictions would be implemented across all dominant forms of media, including outdoor advertising, the Internet and sports sponsorship, in order to be avoid the shifting of advertising to new media (e.g. Internet, social media) (Kelly et al., 2013). However, explicit attention is needed to the potential equity impacts.

**Food labeling.** Simple, user-friendly labeling on food packaging supports informed consumer choice and can incentivize food manufacturers to develop new healthier products, or reformulate existing products. However, use and understanding of the dominant standard in nutrition labeling—nutrition information panels—is significantly lower among lower income, lower literacy and ethnic minority groups (Hawkes, 2006). Independent consumer testing has consistently identified interpretive, front-of-pack labeling (such as traffic light or other color-coded schemes) as the most popular and easy-to-understand format across all social groups. Mandatory, standardized front-of-pack labeling is likely to be a highly cost-effective and equitable population health intervention (Hawkes, 2006; Sacks et al., 2011). However, few real-world examples of mandatory front-of-pack labeling exist. Government-endorsed, voluntary schemes are starting to be implemented or are being considered in a number of countries. A concern with voluntary labeling schemes from a health equity perspective is that they do not cover the entire packaged food supply. There is therefore a risk that foods not covered by the scheme are targeted to, or are more affordable for, less-advantaged consumers.

**Food reformulation.** Interventions aimed at reducing the proportion and amount of less healthy nutrients in processed food products can be achieved through legislation (for example, through trans-fat bans) or through voluntary collaboration between industry, governments and/or non-government bodies (e.g. the UK Responsibility Deal or the Australian Heart Foundation Tick Programme). The strongest evidence is for the impact and cost-effectiveness of government-led food reformulation initiatives (Webster et al., 2012); however, to-date, most actions have involved voluntary industry commitments. While food reformulation is a universal approach that benefits the whole population only if all brands of a product are reformulated, this approach does not reduce inequities. However, its ensure inequities are not exacerbated.
Targeted food relief schemes
Targeted food or financial assistance offer potential to support disadvantaged households to access healthier diets. However, there is limited high-quality evidence of the impacts of these strategies on healthy eating \( (Lucas \textit{et al}., 2008; \textit{Black \textit{et al}., 2012}) \). Providing food vouchers rather than direct cash payments may protect support for food, but targeted food subsidies alone may not be efficient without additional policy instruments \( (\textit{Andreyeva \textit{et al}., 2012; \textit{Black \textit{et al}., 2012}) \).

Nutrition-sensitive policy
Nutrition-sensitive policies are typically implemented outside of the health and food sectors. A wide range of social and economic policies have the potential to help reduce diet inequities by improving living and working conditions, increasing access to education, providing stronger income and social protection, and promoting healthy local food environments \( (\textit{Friel \textit{et al}., 2007}) \). However, rarely have they been explicitly evaluated for their impact on diets and their social distribution. Two examples discussed here are income and social protection, and trade policies.

\textit{Income and social protection}. Brazil has been one of the few countries to reduce income inequities over the past two decades and simultaneously enjoyed improvements in health indicators, including nutrition-related indicators, partly through significant investment in education and through the use of a comprehensive social welfare program called Bolsa Familia \( (\textit{Popay \textit{et al}., 2008; \textit{Beddoes, 2012}) \). Similarly, the Mexican government introduced the successful Oportunidades—a government conditional cash transfer program, designed to target poverty by providing cash payments to families in exchange for regular school attendance, health clinic visits, and nutritional support \( (\textit{Rivera \textit{et al}., 2004}) \). While these two programs have not looked at the impact on dietary inequities \textit{per se}, their attention to underlying drivers of social inequities is an important part of the solution to improve dietary inequities \( (\textit{Friel and Ford, 2015}) \). Shifting how payments are used from various social protection programs, including cash transfers and public works schemes, away from harmful items such as processed foods toward healthier items such as fruits and vegetables is an attractive opportunity for making social protection healthy eating sensitive.

\textit{Trade}. Trade liberalization—the reductions in tariff and non-tariff barriers to trade—has led to greater amounts and types of food being imported into countries, which in turn can alter the nutritional quality, amount and price of food available, thus shaping food preferences and affecting diet-related health \( (\textit{Hawkes \textit{et al}., 2009}) \). The observed nutrition transition in the Pacific Island countries is believed to have occurred partly because of increasing fat consumption from increased imports of margarine, butter, meat, chickens and canned meat \( (\textit{Thow and Snowdon, 2010}) \). An increasingly important aspect of trade policy has been investment liberalization, which aims to attract investment in manufacturing, retail and advertising by international companies \( (\textit{Friel \textit{et al}., 2013a}) \). The link between trades and non-communicable diseases \( (\textit{NCDs}) \) comes partly through the global diffusion of food products that are harmful to health enabled by greater foreign direct investment and penetration of transnational food corporations \( (\textit{TNCs}) \) \( (\textit{Labonte \textit{et al}., 2011}) \). These TNCs, especially supermarkets, influence eating habits through the products they choose to sell, the retail price, and the labeling and promotion of particular goods \( (\textit{Hawkes, 2005; \textit{Stuckler \textit{et al}., 2012}; \textit{Friel \textit{et al}., 2013b}; \textit{Baker and Friel, 2014}) \). Dietary inequities may arise from trade liberalization, although this has not been evaluated empirically, depending on how the trade-related social benefits ‘trickle down’ through societies \( (\textit{Friel \textit{et al}., 2013a}) \).

Dominant cultural and societal norms and values
Prevailing cultural and societal norms around meals and cooking, food allocation within families and households, openness to new foods, valuing of thrift or displays of wealth and status in food purchasing, and social acceptability (or desirability) of body fat are important in shaping diet quality, and the social distribution of healthy eating behaviors \( (\textit{Eertmans \textit{et al}., 2001; \textit{Delormier \textit{et al}., 2009}) \). While many norms, values and traditions involving food have evolved over long periods of time, food industry actors are increasingly influential in shaping them. This is most visible through the influence of advertising in shaping food preferences, particularly those of children and young people who are overwhelmingly exposed to marketing of energy-dense, nutrient poor foods and beverages \( (\textit{Kelly \textit{et al}., 2010}) \). In contrast, while there are examples of efforts from popular culture, including the rise of celebrity chefs, to challenging unhealthy eating norms, and promoting healthy ones, few published studies have explicitly reported on this area \( (\textit{Smith, 2012}) \). No actions were identified that explicitly targeted cultural and societal norms and values with the aim of improving equitable access to and consumption of a healthy diet.

Daily living conditions
Actions to address the social determinants of health at this level aim to modify the physical, social, economic, instructional, organizational, administrative, management,
recreational or other aspects of people’s daily living conditions. An equity-focused social determinants approach to healthy eating would ideally consider action that seeks to improve the inequities in the immediate conditions in which people are born, live, work and play, in addition to directly addressing food availability, accessibility and price in local food environments. However, there appears to be no published evaluation of such actions. Most of the available intervention evidence at this level has focussed on changing individual behaviors in various settings, such as schools, workplaces, primary health-care centers, and community spaces (CDC, 2013), rather than on modifying the conditions of the setting itself, or the factors underlying them.

Physical environment
In Victoria, Australia, the Food for All Program funded interventions that delivered fresh food to the elderly, developed community gardens in low-income neighborhoods, and addressed transport issues in disadvantaged communities, which made fresh food more accessible for those involved (VicHealth, 2011). While the Food for All program has not evaluated changes in healthy eating inequities, the positive impact on these determinants bodes well for positive effects on inequities in healthy eating. Public transport schemes or fresh food delivery programs may improve access to healthy food among disadvantaged groups and therefore reduce inequities in diets. One study in California found that a supermarket-sponsored shuttle program could be self-supporting in low-income areas in that region (Cassady and Mohan, 2004). In addition to location and transport, improving housing space and quality, including ensuring adequate food storage, refrigeration and preparation space can improve diets among low-income groups (Thompson et al., 2013).

Interventions in retail food stores and supermarkets have shown mixed results (Seymour et al., 2004; Song et al., 2009; Levy and Thompson, 2012). Subsidies to local convenience stores in disadvantaged areas in Scotland allowed stores to stock more and better quality produce, particularly fruit and vegetables (Gibbs and Christie, 2007). The Remote Indigenous Stores and Takeaways project in remote Australia saw some positive changes in store stocking practices, but little impact on sales of healthy choices, which may be related to the cost of healthy food and drink choices compared with less nutritious choices (Queensland Health, 2010).

The literature on the effectiveness of displaying nutritional information in fast food and chain restaurants on dietary inequities is mixed (Swartz et al., 2011; Stran et al., 2013). One study in the USA found that consumers who used the nutritional information made lower energy choices; however, these were more likely to be women, customers in the wealthiest neighborhoods and older customers (Dumanovsky et al., 2011).

Early childhood and education
Educational institutions and centers are a promising setting for promoting healthy eating among all social groups (Hawkes, 2013). Health promotion interventions in these settings typically use whole-of-school approaches, involving the integration of program goals into school curriculum and policies, changes in the school environment, and staff, family and community engagement. The direct provision of food through school meals programs hold much promise for reducing dietary inequities. These have been shown to be effective in improving healthy eating for undernourished and often disadvantaged children (Kristjansson et al., 2009). Studies on the provision of free or subsidized fruit and vegetables and garden-based nutrition programs in schools have shown that they may improve knowledge and diets and reduce inequities (Howerton et al., 2007; Robinson-O’Brien et al., 2009b; Wolfenden et al., 2012). Providing free fruit and vegetables along with nutrition education, increased consumption in schools in Norway (Bere et al., 2006) and also resulted in an increase in fruit consumption by the parents of children receiving free fruit and vegetables in schools (Bere et al., 2007; Ovrum and Bere, 2013). Most early childhood and school-based interventions identified targeted the whole school population and did not report on equity impacts for different subgroups.

Employment and working conditions
The nature of employment and working conditions is a powerful social determinant of diet quality. Giving employees greater control over their work hours, adjusting shift-work schedules and reducing work-related sources of stress can positively influence diets by allowing more time and flexibility for healthy food shopping and preparation, and by increasing self-efficacy and control (Bambara et al., 2010). However, no published interventions measuring the impact of these strategies on diets or dietary inequities are available.

Workplace interventions to promote healthy eating behaviors have shown improvements in employees’ nutrition (Bellew, 2008; Anderson et al., 2009; Steyn et al., 2009; Maes et al., 2011; Hutchinson and Wilson, 2012). Women are generally more likely to participate in educational and multi-component workplace interventions (Robroek et al., 2009) and greater effects of the intervention have been observed in younger populations (Rongen et al., 2013). There was no attention given to equity in the workplace interventions identified.
Health-care services

Health-care services themselves offer a potential setting for improving equity in healthy eating. Overall, there is evidence that nutrition education delivered through primary care settings can be effective in the short term, but interventions do not always have a sustained effect in the long term (Hawkes, 2013). Interventions targeted at high-risk groups and more resource intensive interventions such as one-on-one counselling are effective (McKevith et al., 2005; Harris et al., 2012). Mother and infant nutrition education has been shown to reduce anthropometric indicators of childhood obesity risk in the short term, although equity was not considered in the evaluation (Daniels et al., 2012).

Social participation

No studies were identified which have evaluated strategies explicitly targeting social participation in its broad sense, i.e. the promotion of civic engagement and participation in decision-making and implementation processes, to address inequities in healthy eating, or promote healthy eating more generally. However, a number of community-based healthy eating projects in Australia in recent years have actively sought to promote civic engagement, community participation and relationship-building as a means of promoting healthy eating behaviors. Community-based interventions aimed at improving healthy eating in children, families and Indigenous communities, involving a significant focus on community engagement and participation, have had some success at reducing health inequities (Smith et al., 2004; Borys et al., 2012; Wilson et al., 2012; Mercer et al., 2013; Rush et al., 2013).

Individual health-related factors

The overwhelming majority of intervention evidence available on promoting healthy eating is at the individual level and is delivered within specific settings (such as schools, workplaces and health-care services). Actions at this level can broadly be classified into three categories: nutrition education, skill-building programs and public awareness campaigns.

Nutrition education

Nutrition education programs vary widely in approach and intensity, from individual or family-based counseling, to specialized nutrition-focused school curriculum development, workplace wellness initiatives and written education materials (Moodie et al., 2008; Henderson et al., 2011; Burke et al., 2012; Haynos and O’Donohue, 2012; Campbell et al., 2013).

They tend to be resource intensive, and consistently report an overrepresentation of women, people from higher socio-economic positions and otherwise advantaged groups (Hawkes, 2013). Recommendations to improve the equity impact of nutrition education programs include targeting the most disadvantaged and hard-to-reach social groups, conducting programs in familiar locations, and providing flexibility in times and child care support (Hawkes, 2013).

Skill building

Skill-building strategies aimed at improving healthy eating typically target food shopping and preparation but have also targeted food production skills. Skill-building programs have had modest to limited impacts on food safety and nutrition knowledge, and on food shopping, preparation and consumption (Greenwell Arnold and Sobal, 2000; Townsend et al., 2006), although frequently report additional benefits such as improved general confidence, social interaction and community connection (Wrieden et al., 2007; Cullerton et al., 2012; lacovou et al., 2013). School and after-school garden programs combined with nutrition education curriculum, for example, have shown promise for improving knowledge, skills and behaviors, including willingness to try new, healthy foods (Block et al., 2009; Robinson-O’Brien et al., 2009a; Oxenham and King, 2010; Davis et al., 2011). A recent systematic review of community garden programs similarly found modest positive impacts on cooking skills (lacovou et al., 2013). There is little evidence on the equity impacts.

Public awareness campaigns

Public awareness campaigns use organized communication strategies to create awareness in the general population through mass and social media, billboards and other outdoor advertising, and local community settings and events (Hawkes, 2013). Mass media public information campaigns have been consistently shown to be more successful in improving knowledge and attitudes among women, and more educated and higher SES groups (King et al., 2013), possibly deepening existing inequities (Lorenc et al., 2013).

CONCLUSIONS

The accumulating international evidence highlights that there are structural issues that affect the availability, affordability and acceptability of food, which influence what and how much different social groups eat. To address inequities in healthy eating, policy and action must tackle the systemic problems that generate poor nutrition, and reflect on how our food and social systems are making people sick.

This review highlights however that there is a dearth of evidence on the equity impact of actions across a range of
policy domains. The bulk of evidence identified in this review relates to interventions targeting individual-level factors (including a considerable number of interventions conducted in daily living environments, particularly in school and workplace settings) and that focus on population averages. Well-designed and executed these actions can achieve modest short-term improvements in health-related knowledge and awareness. Alone, they are highly unlikely to be sufficient to reduce inequities in healthy eating, and at worst, may exacerbate existing inequities, with uptake and impact consistently shown to be higher in more advantaged groups.

Focusing on direct action to help people eat more healthily misses the heart of the problem: the underlying unequal distribution of factors that support the opportunity to eat a healthy diet. Unless this oversight is addressed, inequities in healthy eating will persist and possibly increase. Actions that address daily living conditions and the local settings in which people live show some promise in promoting healthy eating among disadvantaged groups. But much more action is needed at the socio-economic, and sociocultural levels, ensuring that actions in these domains are at least sensitive to their impact on diet and nutrition.

The interconnected nature of the determinants of inequities in healthy eating implies the need for an integrated response comprising whole-of-government policy and community level action. This requires joined-up action at global, national and local levels bringing together the capacity of multiple sectors. As discussed in other health governance literature (Popay et al., 2008; Ottersen et al., 2011), having mechanisms in place to balance the interests of powerful commercial groups, foster the participation of less-advantaged social groups and ensure transparency in all decision-making processes are important components of an equity-focussed approach to healthy eating. Health promotion professionals can play an important role in advocating for these mechanisms, and pushing for greater social responsibility in the private sector.

SUPPLEMENTARY MATERIAL
Supplementary material is available at Health Promotion International online.

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