

Obesity Public Health

Government regulation to promote healthy food environments – a view from inside state governments

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Summary

Food policy interventions are an important component of obesity-prevention strategies and can potentially drive positive changes in obesogenic environments. This study sought to identify regulatory interventions targeting the food environment, and barriers/facilitators to their implementation at the Australian state government level. In-depth interviews were conducted with senior representatives from state/territory governments, statutory authorities and non-government organizations ($n = 45$) to examine participants' (i) suggestions for regulatory interventions for healthier food environments and (ii) support for pre-selected regulatory interventions derived from a literature review. Data were analysed using thematic and constant comparative analyses. Interventions commonly suggested by participants were regulating unhealthy food marketing; limiting the density of fast food outlets; pricing reforms to decrease fruit/vegetable prices and increase unhealthy food prices; and improved food labelling. The most commonly supported pre-selected interventions were related to food marketing and service. Primary production and retail sector interventions were least supported. The dominant themes were the need for whole-of-government and collaborative approaches; the influence of the food industry; conflicting policies/agenda; regulatory challenges; the need for evidence of effectiveness; and economic disincentives. While interventions such as public sector healthy food service policies were supported by participants, marketing restrictions and fiscal interventions face substantial barriers including a push for deregulation and private sector opposition.

Keywords: Australia, obesity, policy, whole of government.

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Introduction

Governments worldwide have recognized the need for improved policy to address the growing prevalence of obesity. In Australia, it has been predicted that 34% of the adult population will be obese by 2025, compared with 21% in 2000 (1). There is limited evidence showing significant and sustained effects of current obesity-prevention education and treatment programmes (2,3). Furthermore, current strategies may preferentially disadvantage those from lower socioeconomic backgrounds (4,5). Successful

public health campaigns, such as tobacco control and road safety, have demonstrated that the most effective approach is one which includes informed policy approaches, particularly those of a regulatory nature (6). Regulatory approaches can potentially drive positive, sustainable and equitable changes in obesogenic environments (7), particularly because they influence the environments for the whole population rather than only those of individuals or small groups. Modelling studies demonstrate that many of the most effective and cost-effective interventions are regulatory in nature (8,9), and many have strong public support

(10,11). Despite these credentials, and authoritative bodies recommending the inclusion of regulatory interventions in comprehensive obesity-prevention strategies (12,13), few have been implemented.

We draw on political science theory and frameworks for explaining and predicting policy processes and outcomes. The domains considered of most relevance to this study include governance and governing systems; the way the policy debate is framed; and the interactions between stakeholders in the policy process.

Governance arrangements provide the basis for organizing and managing the planning, implementation and evaluation of regulatory interventions. In Australia, there is a multitiered governance system comprising over 560 local councils, eight state/territory parliaments, the federal parliament (14) as well as links to international systems. State/territory powers are limited by the Constitution and Commonwealth legislation, while state/territory legislation defines local government powers (14). The public health literature (12,15,16) and several government food policy documents (17–19) emphasize the importance of whole-of-government (or joined-up) approaches to food policy interventions. This governance approach challenges the notion that policy interventions should be constrained to individual government departments. According to Walt, a hierarchy of policy power exists between government sectors which determines their ability to influence policy processes and outcomes in accordance with the interests of their constituencies (20), for example, economic or deregulation agenda assuming higher importance than health agenda.

The analysis of the policy-making process has moved from rational models that depicted the process as linear, to that of a process of argumentation (21), with importance given to the way policies are framed. According to Rein and Schön, policy-framing is a 'way of selecting, organizing, interpreting and making sense of a complex reality to provide guideposts for knowing, analysing, persuading or acting' ((22), p. 146). Gasper and Apthorpe interpret framing as 'what and who is actually included, and what and who is ignored and excluded' ((23), p. 6). In reality, the framing of policy influences which stakeholders are involved, the interpretation of problems, what solutions are supported and how they should be implemented (22).

The literature identifies many stakeholders involved in the policy-making process. These stakeholders include government, the private sector and non-government organizations. Their roles individually and collectively (as policy 'networks') have a major influence on the policy process and outcomes. Theories ranging from pluralist (power is spread throughout society with government neutrality) to elitist (power concentrated in a minority group) views are used to explain who has the power in policy-making ((24), p. 19). Certain interest groups, particularly groups that

contribute towards the economy, typically have greater influence over government than others (24).

While there is debate about the role of government and the most effective policy options for obesity prevention (25,26), policies targeting the food environment have been implemented globally, for example, television junk food advertising restrictions in the United Kingdom (27), menu labelling regulations in New York (28) and soft drink/confectionary taxes in Denmark (29). In Australia, examples include school canteen policies (30–32) and public sector healthy food service policies in Queensland (33).

Little is known about how those involved in developing government regulation perceive the establishment of specific obesity-prevention interventions. Furthermore, there has been little empirical analysis of barriers and facilitators to regulatory change as they relate to potential obesity-prevention initiatives in Australia. An understanding of these factors is a vital step in successfully identifying the most promising regulatory opportunities. We have previously investigated this at the local government level in Australia (34,35); this paper follows on from this work by examining the food policy environment at the state/territory government level. The research questions informing this paper are:

1. What do Australian state government level policy-makers consider to be promising regulatory interventions for creating healthier food environments?
2. Which interventions are most supported (or least supported)?
3. What do policy-makers perceive as the barriers, facilitators and broader implications of proposed interventions?

Methods

Recruitment and participants

A purposive sampling technique was used to ensure reach across (i) the diverse range of government sectors that influence the food system and (ii) all Australian states/territories. Participants were drawn from 10 policy areas (see Table 1) that could potentially impact on food environments and reduce obesity prevalence. In total, 45 interviews were conducted with 47 senior representatives (e.g. directors, managers or senior policy officers) from government departments, relevant non-government organizations and statutory authorities (see Table 1). Participants were selected by the research team on the basis of having policy expertise in their specific sector (e.g. agricultural or transport policy) or expertise directly related to food/nutrition activities. A written invitation was followed by a telephone call; 47 of the 56 contacted (84%) agreed to participate.

Table 1 Summary of interviews by sector and by state/territory jurisdiction

Sector	Number of interviews	State/Territory	Number of interviews
Health/Human Services	12	Victoria	19
Transport	5	South Australia	6
Generalists/	5	Western Australia	5
Non-government		Queensland	4
organizations		Northern Territory	4
Planning	4	New South Wales	3
Premier and Cabinet	4	Tasmania	3
Education	3	Australian Capital	1
Primary Industries/	3	Territory	
Agriculture			
Environment	2		
Sport and Recreation	2		
Statutory Authorities	2		
Treasury/Finance	2		
Regional development	1		
<i>n</i> total	45	<i>n</i> total	45

Data collection and management

Interviews (mean length 62 min) were conducted between April 2009 and June 2010, predominately on a one-on-one basis (three interviews were with two participants). All interviews, excluding one, were conducted by the first author (JS). Interviews were conducted in person for participants in Victoria and via telephone for interstate participants. Forty-four interviews were digitally recorded; one participant did not consent to the interview being recorded. Interviews were transcribed and then uploaded to N-Vivo 8 (QSR International, Melbourne, Australia). Interviews were the preferred method of data collection because (i) the study was exploratory and (ii) interviews yield in-depth descriptions, explanations and rationale (36). The interviews comprised three components:

1. A semi-structured component to elicit participants' suggestions for regulatory interventions to promote healthier eating environments;

2. A structured component to identify participants' support for 12 pre-selected interventions relating to primary production, food processing, distribution, marketing/information, retail and service (see Table 2 for interventions). In order to maximize independent thought, participants were questioned about their ideas prior to discussing the list of pre-selected interventions. The research team identified the pre-selected interventions following an extensive literature review of suggested interventions to promote healthier eating environments and prevent obesity. Interventions were included if they could be specified as a regulation and if state governments had jurisdiction to enact the regulation. The department responsible for each inter-

vention (e.g. 'Treasury' for interventions of a fiscal nature) was identified. To ensure informed discussion, participants were only questioned about interventions applicable to their department or area of expertise;

3. A semi-structured component was used to identify the participants' perceptions of the barriers, facilitators, feasibility and broader implications of all interventions discussed.

In this project, regulatory intervention was defined as any intervention by government that was either legislated or enforced. Programme-based interventions, for example, a programme promoting active transport to school, were not included.

Analysis

Data were analysed by two researchers (HM, JS) using constant comparative (37) and thematic analyses (36). The substantive significance of concepts was assessed in terms of the proportion of participants who discussed the concept and by constantly comparing the consistency of reporting (36,38). Collaborative analysis was employed with researchers analysing themes independently and then together to reach consensus. Analysis was conducted at three levels. First, we undertook descriptive analysis incorporating participants' (i) suggestions for regulatory interventions and (ii) responses to the pre-selected interventions. Second, transcripts were analysed to determine themes that cut across both domains. Finally, themes were related to relevant theory and knowledge.

Ethics

Ethics approval was granted by Deakin (EC 232-2007) and Monash (2007-00-2150) Universities. Participants provided written informed consent prior to participation.

Results

Regulatory interventions suggested by participants

Participants commonly suggested four main regulatory approaches for promoting healthier eating environments: (i) regulation of unhealthy food marketing; (ii) urban planning; (iii) pricing reforms in the food retail sector; and (iv) food labelling.

The regulation of unhealthy food marketing was the most common intervention suggested by participants, with over one-third proposing this as a solution. Participants generally perceived it to be the responsibility of the federal not state government:

I'd certainly have no problem if I were a politician banning junk food advertising. It's a done deal for me. It's cost

Table 2 Participants' responses to the pre-selected interventions

Supported interventions	Caveats
<p>Food marketing/Information</p> <p>1. Restrict television advertising of unhealthy foods/beverages during programmes with high viewing rates by children (>80% support by participants) <i>... so while there is legal advice to say that on a technicality broadcasting in certain viewing times, that state governments may have the ability to legislate – we've said that we think first and foremost a National approach is the best way to go. (Premier and Cabinet)</i></p> <p>2. Restrict other marketing of unhealthy foods/beverages to children, e.g. Internet, billboards, sports sponsorship (>80% support) <i>Trying to control advertising is clearly a big thing. The really big question you've got there is how do we influence the ... internet. I think the sport sponsorship was actually starting to get taken on a little bit through alcohol. (Health department)</i> <i>I think the community would be for that if the government is brave enough and it really is a national decision; it can't be done jurisdiction by jurisdiction. (Health department)</i></p> <p>3. Mandate nutrition and cooking classes at selected school levels (>60% support) <i>[nutrition education] needs to be part of the curriculum ... kids need to learn about it when they're young. It needs to be done in conjunction with physical education, because it's [obesity] about the input and the output ... I think it needs to be part of the primary school curriculum and ... it needs to be built upon in the secondary ... (Education department)</i> <i>I think there are some legislative things in the food industry for example ... probably just around schools, there are a number of barriers to implementing these things and legislation is probably using a sledgehammer really. (Health department)</i> <i>It's a good idea but you've got the crowded curriculum problem. And you've also got the facilities problem ... most public schools wouldn't have access to it [kitchens]. (Health department)</i></p>	<p>Need to negotiate with industry Federal government (rather than state government) responsibility</p> <p>Feasibility; Difficulty controlling the Internet Federal government (rather than state government) responsibility</p> <p>Schools were seen as a setting that should not necessarily be regulated (in relation to food supply) as a school's prime business is to educate. Feasibility; Difficult to implement because of time constraints and competing subjects (already 'crowded curriculum'); inadequate facilities in schools</p>
<p>Food service</p> <p>4. Implement food service policies to ensure a minimum nutritional standard for foods served in all government institutions (e.g. schools, prisons, hospitals, government workplaces, sports centres) (>80% support) <i>... I think there's a duty of care in government institutions and schools that if we're trying to promote good healthy eating in the community then in those institutions that governments control, we should have standards. (Treasury department)</i></p> <p>5. Implement food service policies to ensure nutritional quality for foods served in workplaces, e.g. restricting the sale of energy-dense nutrient-poor foods in workplace canteens (>80% support) <i>Yes and in fact there's probably an opportunity there with the healthy workplaces [initiative] the Federal government is funding at the moment (Health department)</i> <i>I really think that's a hard one to do by regulation ... however it's one you could do through collaboration ... there is a bit of an argument that, and it's a public health argument, is that employers need to look after their employees' health because if they are not healthy, and end up going on sick leave, or retiring early, then they've lost their investment ... (Treasury department)</i></p>	<p>Not as a regulated intervention (achieve via 'best practice' examples and guidelines instead)</p>

Table 2 Continued

Supported interventions	Caveats
Least-supported interventions	
Primary production	
1. Regulate to protect existing land that is used to grow fruits and vegetables near cities	
<i>... [The intervention] is not an obesity thing ... it's a climate change thing because it reduces carbon miles. Where the food is grown is less important than [whether] people have access to it. (Health department)</i>	
2. Provide incentives for fruit and vegetable growers to remain on agricultural lands	
<i>... you've got to ask what objective you're trying to achieve there. If you're trying to have less expensive fruit and vegetables, then you're not going to do that by encouraging ... farmers to stay where they are, even in areas that might be getting more and more expensive to operate from ... It doesn't make sense at all. It would never get past Treasury. (Treasury department)</i>	
3. Mandate public disclosure of terms of trade for transactions between growers and retailers	
<i>What's the policy objective of that? It's got nothing to do with obesity. It may well have something to do with market failure and fairness of trade. (Treasury department)</i>	
Food distribution	
4. Subsidize cold storage facilities for distributing fruits and vegetables to remote areas	
<i>... the delivery [to] regional and remote areas is probably [more of] the issue ... Freight might [need] innovative solutions rather than ... traditional. You can't get trucks to most of these communities ... so looking at other means of getting the supplies to the communities. (Transport department)</i>	
Food retail	
5. Set a maximum allowable mark-up on fruits and vegetables for retailers based on the price at the farm gate	
<i>From a Treasury perspective you've got to ask 'why should government regulate price?' I mean, ideally people should [demand] – the cost should be reflected. ... Because what happens is people will just stop producing fruit and vegetables. Or they [retailers] just won't buy them if they can't make a profit out of it ... That's not what I want. (Treasury department)</i>	
6. Prohibit unhealthy foods/beverages from being 'on special' in retail outlets	
<i>I think that's against the free market and is not appropriate. You might have more voluntary schemes or code of practice about where particular food items are placed and how they're visible but I could only ever see voluntary stuff. (Health department)</i>	
7. Restrict retail hours of fast food outlets and restaurants	
<i>No ... I suspect the benefit would be small and I think the real danger there is that it undermines credibility for obesity messages, if we were to be adopting what might be perceived to be a punitive approach – telling people you can't go to the restaurant ... (Non-government organization)</i>	
<i>I think you're better off restricting the number of fast food outlets overall. I think that's a better approach. (Health department)</i>	

effective, evidence is pretty strong. Obviously it's negotiating that with industry – that's a big issue. And it needs a Commonwealth lead as well. (Health department)

Over one-third of participants suggested planning regulations to limit the density of fast food outlets and/or improve access to healthy fresh foods:

I think one of our biggest things we can do is more things around density of junk food [outlets] . . . So urban planning laws around that. (Premier and Cabinet department)

Pricing reforms to decrease the price of healthy food/beverages and increase the price of energy-dense nutrient-poor foods were suggested by a third of participants:

I think we need to have a differential tax system for energy-dense nutrients that provide little . . . other benefit. It's just too easy to bulk up things with fat and sugar and sell them at a huge profit. (Health department)

Several participants suggested an added benefit of pricing reforms was that revenue accrued could be invested in health promotion activities:

. . . the other benefit of pricing signals is that you get what some refer to as the 'double dividend'. You get additional revenue . . . which you then can put into the health system. (Treasury department)

An improved food labelling system was suggested by over a third of participants, with several predicting this could lead to food product reformulation as companies strived to achieve a 'healthier' label:

There are one or two ministers . . . who are trying to get some symbol type front-of-pack labelling in terms of particularly the fat content . . . It has a two-edged sword . . . people reformulate their products to get an orange or a green tick rather than be branded as red. So it actually does end up in reformulation of the food supply as well . . . (Health department)

Participants' responses to the pre-selected interventions

Overall, five of the pre-selected interventions were supported (over 60% of participants, and in the majority of cases over 80% of participants, supporting the intervention), and seven were less supported (less than 50% of participants supporting the intervention) (see Table 2). Interventions relating to food marketing/information and food service received greatest support; although, while support was often provided in principle, participants also indicated a number of caveats (see Table 2 for quotes demonstrating these views). The supported food marketing interventions were restricting television advertising of unhealthy foods/beverages during programmes with high

child viewing rates and restricting other marketing of unhealthy foods/beverages to children (e.g. Internet, billboards, sports sponsorship). However, as previously indicated, these interventions were commonly seen as the responsibility of the federal, rather than state governments. The food service intervention that received strongest support was implementing policies to ensure a minimum nutritional standard for foods served in all government institutions (e.g. schools, prisons, hospitals, government workplaces, sports centres). Interventions relating to primary production and the retail sector received least support. These were generally seen as economically unviable, interfering with the market-driven economy or unrelated to obesity.

Barriers and facilitators

Whole-of-government approach

The most dominant theme emerging from the interviews was the need for a whole-of-government approach. Several participants commented that government agencies working in 'silos' created a barrier to change. As one participant from a Transport department explained:

I think it's very easy in government to be in silos and to only think of your own little area. And it's very easy, whether in transport, agriculture or health or whatever, to just think 'right well, that's somebody else's area'. Food is a really interesting issue because it doesn't sit within one group . . . each department needs to seriously think about food and what role they can play in working together. But I sometimes despair about the abilities of government departments to work with each other.

Influence of the food industry

Many participants saw the lobbying power and influence of the food industry on government as major barriers to food-related regulation, for example:

I mean [A and B companies], they're defining what industries are producing to a large degree. I think you could actually really do something if you could work with those industries which are really controlling, well, they're controlling ministers' thinking, through talking to Premiers and the like . . . they're controlling what the industry does produce and how it produces. (Health department)

Collaborative approach

Working with industry was seen as an important facilitator in achieving a healthier food environment, as this Primary Industries department representative indicated:

We . . . don't work well with our food industry in achieving outcomes. We tend to have quite an adversarial

role . . . I think working with our food industry on a partnership basis is probably something that could achieve some really good outcomes.

Several participants described the use of a ‘carrot’ rather than ‘stick’ approach, emphasizing the importance of providing incentives for change rather than regulating undesired behaviour, for example:

. . . there’s a number of stakeholders that play in the food/health space . . . food manufacturers are obviously one very important one . . . A lot of the manufacturers are overlooked in terms of how they can contribute to addressing wider public health objectives. I think often the approach has been to come at them with a big stick, the regulatory approach, ‘you must do this or you must do that’, but not ever giving them any carrot or any incentive to do something. (Regional Development department)

Conflicting policies/agenda

Perceived conflicts between policies and departmental/agency agenda were a dominant theme. Several participants commented that economic considerations prevailed over health concerns and that a more balanced approach was necessary to improve the food environment. A health department representative spoke about this barrier when discussing the potential for an overarching state/territory and national food strategy:

. . . we have tensions [between departments] . . . because [it is the role of industry portfolios] . . . to argue for innovation of industry and increased sales of [State] produced food. And that can happen even if there is potentially a public health detriment.

Challenges of using regulation as a tool

Another dominant theme was the use of regulation as a tool to achieve change in the food environment. Participants discussed challenges of this strategy, specifically whether regulation was the most appropriate instrument (vs. unenforced policy, self-regulation, guidelines); the appropriate level of government intervention; and the agenda/systems within high levels of government that challenge regulation. The following quote was typical:

I think ‘policy’ approaches [rather than regulation] are the only thing to do . . . where you’re making food available or people are purchasing food. You’d certainly never see a case where you’d regulate what was sold in a school canteen . . . The government would just see that as an incredible over-burden for a relatively small issue . . . I think sometimes the advocates forget that wherever you have regulation, you need an infrastructure to monitor compliance. And that can sometimes be more expensive. (Health department)

Several participants spoke about the active deregulation agenda that has been in place at federal and state government levels for some years, heavily supported by the private sector. This agenda is driven by the imperative to reduce red tape for businesses in order to increase their productivity and stimulate economic growth (39). States require ‘Regulatory Impact Statements’ (or business impact assessments) to be completed for proposals likely to have a regulatory impact on business or not-for-profit organizations (unless the impact is of a minor nature or does not substantially change existing arrangements) (40). The effect that these factors have on enacting regulation was described by a Health department representative:

. . . every time we propose policies we’ve got to do regulatory impact statements and you’ve got to do demonstrate there’s no increase in regulatory burden on industry. So . . . you’ve got to show that either the health benefit is so huge . . . or you’ve got to show that there’s no regulatory impact . . . industry will always argue that there’s a regulatory burden . . . I’m not sure that I can see an easy way out of it, but I think if we start slowly and start with the easy things such as restricting things in government institutions and schools . . . they’re things that we can do without changing ‘the law’ . . .

Participants believed that the cost of implementing regulation was a major consideration for government, as this Treasury department representative explained:

. . . regulation in general seems to be a cost to the economy, the cost of doing business and so obviously there’s rather big implications for regulation. Government sees it, I think, as a necessary tool, they’re always regulating certain things but we’re certainly much more conscious of that cost. State and Commonwealth governments have . . . all got a commitment to reducing regulation.

Difficulties with the uptake and enforcement of regulations were also perceived as barriers by several participants, as this Education department representative articulated:

I guess it’s basically the fact that . . . we have got regulations [and] . . . policies in place, but they’re disregarded perhaps or they’re not enforced, or people are not taking them on board as much as they should be.

Evidence

Another dominant theme was the importance of evidence on which to inform decisions. The type of evidence required was categorized into two main categories: proof-of-efficacy trials and economic. Several participants discussed the need for proof-of-efficacy trials or pilot studies to facilitate the uptake of interventions, as this quote from a Primary Industries department representative demonstrates:

You've got to do things and see if they work. What is tending to happen is very large top down ideas keep coming up. But there's no reason you can't do pilots and trials and exercises to see 'will it work?' . . . we can think of ideas about how we might influence or move things along but the real world might knock us on the head when we actually try to do it . . .

Participants commonly spoke about the difficulty of influencing decision-makers to implement policy when evidence was insufficient, as demonstrated by this quote from a non-government organization representative:

There is no one policy, practice or program that we know will achieve, in the short to medium term, a relatively substantive benefit . . . So in a political setting it is very hard to sell a 'part solution' . . . that is one of . . . the biggest challenges we face in terms of policy reform with regard to obesity. Because many of these [potential policies] have fairly limited evidence associated with them.

Several participants challenged the effectiveness of potential interventions to reduce obesity. Insufficient evidence appeared to be one of the major reasons why interventions targeting the primary production sector were not supported by participants. For example, a Primary Industries department representative challenged the evidence surrounding the logic pathway between obesity prevention and the protection of existing land to grow fruits/vegetables:

Using it [land] to grow fruit and vegetables near cities, why would that help [obesity]?

Evidence of the economic benefit of interventions was considered to be important, as a non-government organization representative noted when discussing potential regulations on the retail industry:

. . . you're going to [upset] a lot of people with some of these policies . . . you want to be really clear about your evidence base and especially the economic case, because that's [the type of argument]. . . that gets listened to.

Interfering with a market-driven economy

The potential for regulatory interventions to interfere with the market-driven economy in Australia was perceived as a barrier, specifically, interfering with the supply and demand paradigm. A Treasury representative gave the following response to setting a maximum allowable mark-up on fruits/vegetables for retailers:

Treasury would argue strongly against intervening . . . that's something we wouldn't support . . . that sort of thing should be left to the market without intervention from government . . . Also I suppose too with your primary production things; really from a market base solution, which [are] solutions which Treasury would

generally support, we'd be saying 'well if there's a market for a primary production, it will find itself'.

Economic disincentives

The potential impact of regulations on economic factors, specifically loss of profit and employment, was seen as a barrier by several participants. Economic barriers were the primary reason that interventions relating to primary production (see Table 2) were not supported by participants, as a non-government organization representative noted:

It's easier and better for a farmer to sell up their land. They'll get a better price for it if it's subdivided into housing or roads, than if it's kept in production. Because the economic driver's not there.

Discussion

Participants suggested four main approaches to promote healthier food environments: regulating unhealthy food marketing; limiting fast food outlets via planning regulations; pricing reforms to increase the price of unhealthy foods/decrease the price of healthy foods; and an improved food labelling system. Interestingly, these interventions are largely the responsibility of the federal and local governments rather than state governments. The rationale for suggesting interventions outside state government jurisdiction was not clear. These responses may represent a deflection of responsibility that might be politically motivated, or that participants believe it is more 'efficient' for another tier of governance to intervene due to factors such as inadequate resources or cross-border intervention benefits (41). In response to the set of pre-selected interventions for which the states/territories had authority, participants supported the regulation of unhealthy food marketing/advertising to children and the implementation of minimum nutritional standard food service policies in all government institutions. Primary production and the retail sector interventions received least support as they were generally seen as interfering with the market-driven economy, as having insufficient evidence supporting an association with obesity prevention or were seen as economically unviable. The regulation of unhealthy food marketing was the only intervention that participants proposed as a promising intervention, and was supported on the list of pre-selected interventions, highlighting this as an especially promising intervention.

Some of these interventions have been widely identified as potential approaches to promote healthier food environments, while others have received less attention. However, it should be noted that a comprehensive review of all previously suggested policy interventions was not attempted and that the highlighted interventions represent examples only. Limiting the number of fast food outlets has been

proposed previously (42,43), and Los Angeles City Council recently passed legislation banning new fast food restaurants from opening in South Los Angeles (44). It is not yet evident if this intervention will have an effect on fast food consumption. Pricing reforms (e.g. taxes/subsidies) have also been widely suggested (45–47); however, care needs to be taken that they do not have a regressive impact on low-income households (48) or have other negative consequences (49). Nevertheless, some countries have already administered selective taxes (29,50). Consumer information disclosure, including improved food labelling, has also been widely proposed as a potential obesity-prevention measure (51,52). Despite mixed evidence on the effectiveness of such interventions on influencing food purchasing patterns (53–55), several countries have enacted regulations of this nature (28,56). Restrictions on marketing/advertising to children have been enacted in several European countries (27,57) and in Québec, Canada (58). Evidence from systematic reviews suggests that exposure to unhealthy food advertising/marketing is a contributing factor in childhood obesity (59–61). In Australia, however, the federal government has shown no commitment to enacting restrictions. The introduction of minimum nutritional standard food service policies in all government institutions has received less attention to date. However, moves towards this are evident in one Australian state (33) and in parts of the United States of America (62,63). This intervention is a promising option given that it would impact a large market and potentially send strong messages to large parts of the population (64).

Findings from this study show similarities with those reported in a nine-country European study that asked stakeholders to compare the performance of several policy options for addressing obesity (65). Cross-country results showed that of the options relating to the food environment, improved nutritional labelling, advertising controls and improvements to food sold in public institutions rated highly, whereas subsidies/taxes were not supported (65).

It is necessary to consider the barriers and facilitators to regulatory change in order to develop coherent and feasible approaches. The barriers and facilitators identified in this study are widely recognized as important in the policy-making process and are not unique to policy targeting the food environment (and more indirectly, obesity) or health policy in general (66–68). An American study that examined barriers/enablers to the introduction of state policy for addressing childhood obesity prevention (69) identified some similar factors to those identified in our study. Specifically, lobbyists for unhealthy food manufacturers and intervention costs were perceived barriers, while gaining support/involvement of key players was an enabler. They also found that the support of senior legislators or people with strong personal interest, misconceptions about the problem/proposed solutions, national media exposure and

the political climate, influenced the enactment of legislation (69).

The need for a whole-of-government response to promoting healthier food environments was the most dominant theme to emerge in this study. The implementation of this governance approach is challenging because of the ‘silo’ effect of departments predominately being immersed only in issues related to their own sector. While the importance of integrating policy activities associated with food environments across the three tiers of government in Australia has been previously highlighted (70), it is not clear whether this is occurring in practice. Participants at state level recognized the need to link obesity-prevention regulatory actions to the federal level; however, there was little discussion of linking to the local government level. As previously noted, state governments primarily define local government powers. Our research at the local government level found that policy interventions to promote healthy eating (beyond food safety) were generally not supported by local government representatives (34), and that funds provided from state government influenced policy directions at the local level (35). Improved communication and integration between sectors and government tiers will help to better align policies. For example, policy interventions to promote healthy food procurement in public sector institutions need to take account of legislation that falls under all three government tiers.

Factors consistent with a neo-liberal ideology were suggested by participants as barriers to regulations targeting the food system, specifically the push for deregulation and the potential for interventions to interfere with a market-driven economy. This ideology affects the way government operates, its perceived role and the policy instruments most appealing to address a problem. Linder (71) reports that policy-makers will usually begin with the least coercive policy instrument when considering options to address an issue. Our findings support this theoretical base in that adopting a collaborative approach with actors (e.g. working with industry) was seen to facilitate change in the food environment, whereby a ‘carrot’ (incentives), rather than a ‘stick’ (regulatory) approach, is adopted (72). Obesity has been described as a commercial success, but a market failure (73); therefore it can be argued that those ideologies that condone the ‘business as usual’ approach to governance arrangements need to be challenged if a better balance between health and economic agenda is to be achieved.

The influence of various stakeholders and the interplay between competing interests is widely recognized in policy-making theory and practice (20,74,75). The lobbying power and influence of the food industry on government decision-making was seen as a barrier to change in this study. In Australia, the food and beverage, grocery and fresh produce industry represents 26% of total manufac-

turing turnover (in 2007–2008) and is responsible for approximately 3% of employment (76). This gives the food industry great political leverage. In addition, participants referred to economic/industry growth agenda prevailing over public health agenda, suggesting the drivers of policy-making are generally not well aligned and in some cases in direct conflict. Furthermore, it was suggested that particular departments, for example, Treasury or economic portfolios, had greater influence than health-related portfolios. These findings reinforce the theoretical basis to the policy-setting environment reported by Walt (as previously outlined) who suggests that a hierarchy of power exists within government sectors which determines their ability to influence policy processes and outcomes in accordance with their interests (20).

Evidence-informed policy-making has been recognized as an important component in the policy-making process (77). The use of regulation as an obesity-prevention measure is relatively new, and limited data exist on the effectiveness of many proposed interventions. Despite this, regulatory interventions explicitly targeting obesity prevention have been enacted globally. These interventions can act as natural experiments and will assist in elucidating the effectiveness of regulatory change on obesity prevention. However, as identified by participants, evidence is only one of many factors in the complex policy-making process, and is used by government in different ways (78) subject to the ideologies of those who influence policy (79). As Rein and Schön state, ‘policy controversies cannot be settled by recourse to facts alone or indeed by recourse to evidence of any kind, because they derive from conflicting frames’ ((22), p. 148).

The strengths of this study include the sample, i.e. interviewing those directly involved in informing the policy-making process, and the broad scope of stakeholders interviewed. Participants from the environment sector may be under-represented because of recruitment difficulties (generally because of a perception on the part of participants of being unable to add to the discussion). To date we have investigated the local and state government tiers; further analysis on how policies and actions between governance tiers could be aligned will be undertaken on completion of the forthcoming federal government data collection phase. A limitation of the current study is that participants were not asked explicitly about the additional complexities of working within a multilevel government. However, some participants did independently discuss this issue. While this study was undertaken in the Australian context, we believe that the findings and lessons learned are more widely transferable as many of the ideologies (e.g. market-driven paradigms and the push for deregulation) are common internationally.

To our knowledge, no other studies exist within Australia which have analysed support for, and facilitators/

barriers to regulatory interventions at the state government level relating to the food environment component of obesity prevention. This study has given a valuable ‘inside view’ from policy-makers about potential regulatory interventions. Policy researchers and public health advocates will benefit from having greater understanding and clarity of the barriers and facilitators for implementing policies for obesity prevention. Understanding the policy landscape is essential for the development of a coherent, feasible policy approach to creating healthy food environments. Some of the supported policies have substantial political barriers, while others face fewer challenges. Identifying the ‘low-hanging fruit’ (64) or easy wins is an important part of the process, and public sector healthy food service might be one such policy. Although policies such as restrictions on unhealthy food marketing to children have demonstrated cost effectiveness and public support, they face substantial barriers from government and private sectors. Many opportunities exist and given that the prevention of obesity is a focus of the current political agenda, this is an opportune time to push for obesity-prevention regulatory action.

Authors’ contributions

All authors contributed to the study design. JS conducted interviews. JS and HM analysed the data. All authors contributed to the drafting of the original manuscript.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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