War on Diabetes in Singapore: A Policy Analysis

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Research

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Abstract

Background: In April 2016, the Singapore Ministry of Health (MOH) declared War on Diabetes (WoD) to rally a whole-of-nation effort to reduce diabetes burden in the population. This study aimed to explore how this policy has been positioned to bring about changes to address the growing prevalence of diabetes, and to analyse the policy response and the associated challenges involved.

Methods: This qualitative study, using the policy triangle framework of Walt and Gilson, comprised analysis of 171 organisational documents on the War on Diabetes, including government press releases, organisational archives, YouTube videos, newspaper reports and opinion editorials. It also involved interviews with 31 policy actors, including policy elites and societal policy actors.

Results: Findings showed that the WoD policy generated a sense of unity and purpose across most policy actors. Policy actors were cognizant of the thrusts of the policy and began to make shifts to align their interests with the government policy. Addressing those with diabetes directly would be essential to understanding their needs. Being clear on who the intended targets are and articulating how the policy seeks to support the identified groups would be imperative. Issues of fake news, unclear messaging, and lack of regulation of uncertified health providers were other identified problem areas. High innovation, production and marketing costs were major concerns among food and beverage enterprises.

Conclusion: While there was greater public awareness on the need to combat diabetes, continuing dialogues with the various clusters of policy actors on the above issues would be necessary. A shared global diabetes policy, particularly to enhance access to healthier food and beverage would be critical.

Background

Diabetes is a condition that affects more than 400 million adults globally, and this number is expected to increase to above 640 million, which equates to one in ten adults by 2040 (1). The global prevalence of diabetes among adults over 18 years of age rose from 4.7% in 1980 to 8.5% in 2014 (2). It is estimated to be the seventh leading cause of death in 2016, where 1.6 million deaths could be attributed to the condition (2). In Singapore, over 400,000 Singaporeans live with the disease. The lifetime risk of getting diabetes is one in three Singaporeans; and the number of those with diabetes is projected to hit over one million by 2050 (1). An estimated 430,000 (or 14 per cent of) Singaporeans aged 18 to 19 years are also diagnosed with pre-diabetes, where their normal blood sugar levels are higher than normal but not high enough to be given the diagnosis of diabetes (3).

In response to this, the Singapore Health Minister, on 13 April 2016, has declared War on Diabetes (WoD), citing psychosocial burden on individuals and families and economic reasons for the thrusts of this policy (4). This fight against diabetes is not new as Singapore has explored measures to combat the rising prevalence of diabetes. For example, the annual National Healthy Lifestyle Campaign incepted in 1992 aims to raise awareness of how Singaporeans could eat more healthily and incorporate physical activity into their living; the campaign also concomitantly addresses other concerns such as smoking and mental well-being (5). Unlike this campaign, the WoD policy specifically addresses the concerns of diabetes and is positioned

to encourage a whole-of-society effort to reduce the burden of diabetes in the population and to keep people healthy as they age (1, 3).

Diabetes poses a significant public health concern. It can lead to complications in many parts of the body, including kidney failure, leg amputation, nerve damage, heart attack, stroke, vision loss, and severe disabilities, (6–8). It can also bring about substantial economic loss to people and their families and to health systems and national economies, as a result of direct medical costs and loss of work and wages (8). The WHO (8) in their 2016 Global Report on Diabetes calls for a whole-of-government and whole-of-society approach, where all sectors are to systematically consider the health impact of policies in trade, agriculture, finance, transport, education and urban planning. It states that effective approaches, including policies and practices across whole populations and within specific settings would be needed to contribute to good health for everyone. This would mean adopting a life-course perspective, and multi-sectoral and population-based approaches to reduce the prevalence of modifiable diabetes risk factors – such as overweight, obesity, physical inactivity and unhealthy diet – in the general population.

Since the introduction of the WoD policy, it has yet been explored how the policy has been positioned to bring about changes and what the policy actors' perceived challenges are. Not very much is known about the political, economic, infrastructural and ideational constructivist context in facilitating or hindering the policy at the national and subnational levels (9). This study thus aims to contribute towards addressing this knowledge gap by using the policy triangle framework, articulated by Walt and Gilson (10), to analyse the WoD policy response. The policy triangle framework has been widely applied to a variety of health policy concerns, including health sector reforms and public health and in many different countries (11, 12). It focuses on the content of the policy, the actors involved in the policy change, the processes on developing and implementing change, and the context within which the policy is developed (10). The framework is built on the understanding that policy is a product of and constructed through political and social processes (11). This study will identify the contextual factors that shaped the WoD policy, the actors involved, the content of the policy and organisational provisions, and analyse the strategies and policy processes. Results drawn from this study will be used to inform change agents, such as the relevant government authorities, and contribute to the body of knowledge on diabetes policy, thereby enhancing links between science and policy based on the model of strategic science (13).

Methods

This study adopted a qualitative approach as the primary method to address the research questions. Qualitative approaches, as opposed to the natural scientific models used in quantitative research, are interpretivist and offer an inductive view of the relationship between theory and research (14, 15). This study comprised interviews with 31 relevant policy actors and general public and analysis of 171 organisational documents on WoD, including government press releases, organisational archives, YouTube videos, newspaper reports and opinion editorials.

Participants

We conducted purposive sampling of prospective respondents from five distinct clusters of policy actors, including government officials, healthcare providers, service providers (businesses, food manufacturers, etc.), professional associations, academic institutions/ think-tanks, and the general public (with and without diabetes). Respondents were senior officials within their agency (e.g. director, assistant director, centre manager, or manager) and were actors in or close observers of the WoD policy.

This approach is consistent with the policy triangle analysis framework, where it considers the political institutions and public bureaucracies in policy-making to be important aspects of the analysis. The framework also acknowledges and considers the influence of non-state actors, such as the private sector, the civil society organisations and the public (10, 11). This is consistent and aligned with the WHO's assertion that non-state actors, such as food producers and manufacturers, healthcare providers, and people with diabetes should be considered collectively in the multicomponent intervention in addressing diabetes (8). The inclusion of the general public would also be relevant as they are driven mostly by their cultural beliefs or personal experiences, which are often the hardest to identify in terms of their policy goals; their views will therefore be relevant in this policy analysis (16).

Procedure

All respondents who fulfilled the criteria were invited via letter or email to participate in a semi-structured interview. The interviews were conducted face-to-face in English. Three sets of topic guides comprising semi-structured questions were used for the interviews. They were designed specifically for (a) government officials; (b) healthcare providers, service providers (businesses, food manufacturers, etc.), and professional associations and academic institutions/ think-tanks; and (c) the general public (with and without diabetes). As policy and organisational documents constitute the socio-materiality of the policy itself, they were sampled for relevance (17). All relevant documents within the period 1 January 2016 to 31 December 2019 were reviewed. The documents were obtained directly from the respondents if they were not accessible in the public domain. Documentary analysis was conducted in tandem with face-to-face interviews with the policy actors.

Data analyses

Data analysis consisted of analysing interview data and organisational documents in relation to the WoD policy. Thematic analysis was used to analyse data derived from the interviews and documents. The data were read for familiarisation and then again in an iterative manner to identify emerging themes. Key categories of codes were analysed and grouped based on the predetermined codes and themes articulated by Walt and Gilson (10). Thereafter, the data derived from both the interviews and documentary analyses were triangulated to enhance trustworthiness, reliability and validity of the findings (18–20).

Results

Based on Walt and Gilson's policy analysis triangle framework, the findings are presented below in terms of context, actors, content and processes.

Context

All respondents in this study stated that reasons for the development and introduction of the WoD policy were many. They include the rising prevalence of diabetes, an ageing population, an extended life expectancy, increasing comorbidities of diabetes and rising healthcare costs. In addition, the respondents attributed the introduction of the policy to an increasing economic burden of diabetes on the working population and the associated potential adverse impact on the society. These factors together created the moral impetus for the government to introduce the policy to nudge its people to live a healthy lifestyle, respondents stated.

The causes of diabetes were many. The respondents pointed to a complex interaction of economic, social, cultural, individual, national and environmental factors, leading to the formulation of the policy (21, 22). For example, they highlighted that access to unhealthy food (exacerbated by food delivery service, technology and ready-to-eat meals); affluence of society; expansion of eating-out places; roles of the food and beverage industry (manufacturers and retailers) led to the growing diabetes situation in Singapore. It was seen to be made worse by Singaporeans' obesogenic lifestyle, characterised by work stress, poor sleep patterns, and poor overall eating and living habits. The low health screening uptake and lack of prevention measures at individual levels were the other reasons. Genetics, invincibility syndrome, culture, family and personal choice, health literacy, and prevailing treatment models of diabetes were seen to have exacerbated the diabetes situation.

Actors

The actors in the WoD comprised policy elites within the government and societal actors, including the Food & Beverage (F&B) business community (ranging from Small-and-Medium Enterprises or SMEs, to Multinational Corporations, or MNCs), professional associations, healthcare providers, academic think-tanks, civil society, and the general public. This policy-led implementation, which is inherently cross-sectoral, saw the Diabetes Prevention and Care Taskforce, set up by the MOH, facilitated and coordinated the involvement of the various policy actors. Policy actors, such as the F&B business community, were quick to acknowledge their corporate and social roles to fellow citizens, and promptly moved to align their business and corporate goals with the policy. Respondent 11 stated:

[A]s cliché as it sounds; it is really a social responsibility on the business part to really care for the customers' well-being".

The role of the civil society was seen in the involvement of professional associations and voluntary welfare organisations to promote healthier eating and living in the community. Funds were directed to academic and healthcare institutions to encourage and foster diabetes-related research to inform policy and practice. Healthcare institutions were seen to expand their ability to offer better diabetes treatment with increased drug subsidies. Schools, workplaces and organisations implemented policies promoting healthier eating in their premises. The general public were engaged through programmes and schemes, albeit their level of receptivity and engagement towards the policy varied.

Content

In operationalising the policy, a total of 171 WoD-related organisational documents were analysed. The government in working with the various policy actors, and through public forums and engagements, delivered a slew of measures at different time-points following the declaration of the policy. The policy core of WoD, highlighted in the documents, centred primarily on increasing the population's level of physical activity, improving quality and quantity of dietary intake, increasing early screening uptake, and improving intervention to better control diabetes and its associated complications (23).

Notably, in the first two years of the policy launch, the government actively used words, images and symbols to form winning coalitions with different policy actors, such as the F&B industry, people with diabetes and their caregivers, and through various languages, including dialects and vernacular languages to address older adults in the public. The modes of the images included posters, health screening booths and media programmes. Some common symbols and schemes such as the Healthier Choice Symbol (HCS), Healthy Dining Ingredients Scheme (HDIS), Healthier Dining Innovation (HDI), Healthier Dining Grant (HDG), and National Steps Challenges™, targeted consumers, F&B enterprises, and the general public.

As part of its overall strategy, the government collaborated with the Primary Care Networks (PCNs) to provide more supportive services for people with diabetes (1). It subsidised basic screening tests for the public to encourage early detection and treatment. It also put in place systems to foster healthier lifestyles, promote good health by employers in the workplace, and facilitate adjustment of lifestyle habits and better decision-making by individuals (24, 25). Non-standard drugs in the treatment of diabetes were subsidised, which helped open up options for primary care physicians to bring in newer treatment at lower rates to the general public. According to respondent 5, a physician, older generation of drugs were found to have "potential side-effects and less of non-glucose reducing properties", whereas "newer drugs have heart failure protection, cardio-vascular protection". This could only benefit patients with diabetes.

The health ministry also partnered the F&B industry to support major drinks companies and companies undertaking innovation to lower sugar content in their products, by fostering a supportive regulatory environment to encourage innovation and experimentation (26, 27). This is illustrated in the 2017 industry pact, where seven drinks companies pledged to reduce the sugar level in their beverages to 12% or less by 2020 (28). The MOH supported and enabled the industry to use Singapore as a regional headquarter and launch pad to access other Asian markets to sell their healthier products, to provide the economic conditions for the business community to thrive.

Legal parameters were also explored. A public consultation was carried out from 4 December 2018 to 25 January 2019, where a wide range of stakeholders were engaged for their inputs on introducing mandatory front-of-pack nutrient-summary label, advertising regulations for the least health sugar sweetened beverages, excise duty on manufacturers and importers and banning of higher-sugar pre-packed sugar-sweetened beverages (SSBs) (29). The proposed measures, which are to be rolled out in 2020, came nearly three years after the declaration of the WoD, as the government set the stage to create an environment for its people to lead a healthier lifestyle. In November 2019, the MOH went on to introduce the Patient Empowerment for Self-Care Framework, which constituted the first tranche of materials for people with diabetes to more directly effect change in the lives of those suffering from the condition (30).

Processes

Several critical factors enabled or constrained the context in the implementation of the WoD. The following discusses the support for and resistance to the WoD policy, and the potential resources that are further needed for its implementation.

Why war? Why diabetes?

While the WoD served as a useful “policy frame to galvanise government action, and whole-of-society action and attention”, stated a government official (P13), competing views were considerable among non-policy elites. Many non-policy elite actors, for example, questioned the rationale of the WoD. A member of the general public with diabetes (P19) stated: “I am not sure what the logic is behind using diabetes as the condition because diabetes is so innocent!” Some respondents opined that waging a war on diabetes was unnecessary, and it might risk perpetuating stigma among those with diabetes (P12). Others suggested waging a war against sedentary lifestyle or promoting healthier living might be more appropriate (P20).

Policy actors, particularly professional dieticians and the general public, were particularly unclear whether looking solely at individual nutrients, such as sugar, which was seen to be the primary focus of the WoD, was the best approach to stem diabetes. Respondent 18 said: “So I think in a sense we cannot look at individual nutrients; we need to look at diet as a whole. This probably has got to be a very consistent message to the public!” Along the same argument, respondents opined that the policy had focussed too heavily on packaged sugar sweetened beverages (SSBs), rather than on freshly cooked or prepared food. Respondent 3 highlighted: “The beverage may not be the biggest culprit. In fact, the biggest culprit is food”.

Who is the policy for?

Many respondents were unclear of the intended target of the policy. For example, a respondent (P20) with diabetes reported: “I am not sure who they are targeting, I always thought it is the general public from all age groups”. Another respondent (19) said: “It is more for the general public, not for those who already have diabetes”. Respondent 29, who has type 1 diabetes explained: “Type 1 (diabetics) will switch off because it’s like it is too late for them, they already have diabetes”. She shared that causal factors of type 1 diabetes were unclear and it would not be possible to war against type 1 diabetes. This sentiment was echoed by respondents with type 2 diabetes and their caregivers, who highlighted that WoD should more directly address their immediate concerns, which would include helping them with their immediate treatment costs and costs of consumables and related devices. Some respondents observed that pre-diabetic programmes, whilst carefully designed to reduce diabetes incidence, were more accessible to retirees who were available to attend the programmes during workdays, rather than the “supposed” at-risk and younger diabetic groups, who may hold full-time jobs.

Messaging quality: Unclear images, fake news and diet fads

The barrage of messages pertaining to diabetes was found to be at best overwhelming, at worse conflicting and confusing. Messages such as “white rice is bad” and “too much meat will increase diabetes risk” were confusing to the general public respondents. A respondent (P10) explained: “Everything you eat also cannot.

That's the flip side of pushing things too hard". The Healthier Choice Symbol (HCS), which had made significant inroads to encourage healthier F&B consumption was found to be unclear in its representation. For example, a respondent (P10) queried: "If we take drinks with the Healthier Choice Symbol (beverages with lower sugar level), does it mean drinking five bottles of it will be fine?" Rather than emphasising on a particular nutrient such as sugar, some respondents suggested focussing on individual needs, which might be more appropriate. Fake news and popular commercial "diet fads", such as ketogenic and Atkins diets, and intermittent fasting were other concerns, respondents reported. Academic and dietician respondents asserted that consistent advice to the public was lacking and relevant authorities would need to actively clarify unclear images, fake news, and provide consistent messaging on "diet fads".

With the proliferation of technology, some professionals and general public respondents highlighted the need to regulate healthcare services provided via online apps and virtual coaching programmes. Respondent 18, a dietician, explained that nutrition coaches on these platforms may not have the necessary qualifications and training, and could in fact do more harm than good to service-users or patients. She asserted that necessary regulation of online healthcare services is crucial to mitigate any potential threats of online unregulated healthcare services.

High innovation, production and marketing costs

High innovation, production and marketing costs in the (re)formulation of F&B products were major challenges for the F&B industry respondents. Respondents in this sector explained that taste acceptance for newer and healthier F&B products may not come immediately. F&B retailers, driven by profits, may not be quick to support sale of healthier products as the demand for them may not be there at the start. Healthier F&B products must also have reach beyond the local market to off-set the research and development (R&D) costs of F&B manufacturers. They added that it would mean having to harmonise accreditation of healthier products across countries, so that it will make business sense for them, particularly for a country with a relatively small domestic market. To this end, respondents suggested government-to-government and business-to-business collaborations, expressed in forms of shared policies and practices, to give F&B manufacturers the legitimacy to market their (re)formulated healthier products worldwide.

Smaller F&B manufacturers and outlets, such as the SMEs, unlike larger MNCs, reported cash-flow issues to engage in innovation to (re)formulate healthier products. They had to contend with rising utilities, rental footprints, high labour costs and limited physical spaces for stock-keeping-units (SKUs). Many respondents questioned the sustainability of rewards, vouchers and subsidies programmes that encourage healthier cooking, eating and living: "Once you finish, then what? I will go back to my own same old way of cooking. I think it's about sustainability that we need to consider as well before we start on something" (respondent 12).

In contrast, the F&B retailers such as the larger supermarkets were least hit by this policy. They were better resourced and were better able to offer wider ranging F&B products with both high and low/no sugar content to their consumers. The larger food establishments, such as restaurants similarly did not report any impact on their profit-margins. They were able to offer wider variety of F&B choices based on their consumers' needs, who were observed to be willing and able to pay in these establishments.

Discussion

This study has explored how the WoD policy has been positioned to bring about changes in its population and the challenges that have arisen as a result. The findings showed that the WoD has generated to varying extent a sense of unity and purpose across most policy actors. Policy actors were cognizant of the thrusts of the policy and were quick to make shifts to align their interests with the policy. Legal parameters and economic conditions were debated at public consultations and would be set in place over time. Different policy actors were engaged at various time points. The findings also showed that most respondents demonstrated comprehension and acceptance of the arguments of the policy, and were able to appreciate the implications of diabetes for individuals, institutions and the society.

Words, images, and symbols were used to strategically shape the policy to produce “winning coalitions” with the policy actors. However, the findings showed that there were competing perspectives or views across the policy actors. For example, some non-policy elites queried whether a war should be waged against diabetes. Specifying diabetes as the target in the WoD could be seen as labelling or blaming those with diabetes and perpetuating stigma via the causal mechanism or action-consequences typology (31). This causal mechanism has been observed elsewhere and among those with poorer diabetes control or advanced diabetic complications (32, 33). Sontag (34) cautions that describing disease in terms of siege and war or in the form of “militarised rhetoric” could backfire and may have unintended consequences. There would be a need to foster and encourage a positive view towards prevention and treatment of diabetes.

Respondents with diabetes generally did not feel engaged by the policy. Many of them felt that the policy was directed at some ‘other groups’ but not them. Those with type 1 diabetes for example were unsure of who or what the war is waging against as causal factors for type 1 diabetes are unclear. Those with type 2 diabetes reported that the policy should more directly address their underlying concerns of treatment costs. Being clear on who the intended targets are and articulating how the policy seeks to help them is important, as it would have implications on the end beneficiaries (winners) and target groups (or losers) (35, 36). It may also influence the distribution of costs and benefits as it determines who gets what, when, and how, and would have direct implications on practice and implementation (35–37). Concerns over quality of messaging, information fatigue, diet fads and fake news, and the varying interpretations of the symbols (e.g., HCS) would need to be addressed.

Mitigating high innovation, production and marketing costs for policy actors in the F&B industry would be crucial. Larger F&B businesses, including F&B outlets, which were better resourced and better able to innovate and offer diverse and finer products, reported fewer issues in delivering on the policy. Smaller F&B enterprises however faced cash-flow issues to engage in innovation and (re)formulation of healthier F&B products. Concerns over sustainability, linkages to marketing agencies, physical space, and costs highlighted the varying interests, paradigms, operational concerns and decision-making processes within the F&B business community and their associated implementation challenges, which will need to be addressed. Differences between larger versus smaller F&B outlets underscore the need to situate the role of

power in policy and to work through some of these issues. Constant feedback by the various policy actors would be essential (38).

The role of harmonizing accreditation for healthier products across countries will be critical for the F&B manufacturers, considering the relatively small domestic market in Singapore, to engage in R&D for healthier products. A political commitment represented in shared policies by governments to foster innovation and strengthen international partnerships to tackle diabetes and develop healthier F&B products will be crucial (39). This could be achieved through epistemic communities, policy transfer and policy translation, and collaboration and coordination at the global level.

4.1 Study strengths and limitations

All studies have limitations. As with any qualitative research study, the findings cannot be generalised due to its inductive nature. The respective voice of the various policy actors from the five different clusters cannot be generalised as they each constitute a small number of respondents. Potential respondents who viewed the WoD negatively or might not be informed about the policy might not have participated in this study and their views and experience would not have been reflected.

Conclusion

This study has shown that the WoD policy has generated a general sense of unity and purpose across most policy actors. It also illustrated the highly complex environment in 'doing' policy analysis (40). The findings showed that the WoD policy needs to segment and engage the clusters of policy actors separately, and to explore their concerns and listen to their voices. In this instance, addressing those with diabetes directly will be critical to understanding their needs, and being clear on who the intended targets are and articulating how the policy seeks to support them would be imperative. Issues of fake news, unclear messaging, and lack of regulation of uncertified online health providers would need to be addressed. High innovation, production and marketing costs would need to be looked into in greater detail with the F&B enterprises. The policy would also need to be situated at the global stage and environment, to nurture the economic condition necessary for the F&B industry (manufacturers and innovators in particular) to venture into (re)formulating of healthier F&B products. Diabetes is a global issue, and efforts to foster and enhance collaboration and coordination across countries on diabetes prevention and management would be essential and crucial.

Abbreviations

CIRB: Centralised Institutional Review Board; F&B: Food and Beverage; HCS: Healthier Choice Symbol; HDIS: Healthy Dining Ingredients Scheme; MNCs: Multi-National Corporations; MOH: Ministry of Health; PCN: Primary Care Network; SingHealth: Singapore Health Services; SKUs: Stock-Keeping-Units; SMEs: Small-and-medium Enterprises; SSB: Sugar-Sweetened Beverages; WoD: War on Diabetes.

Declarations

Ethics approval and consent to participate

Ethical approval from the SingHealth Centralised Institutional Review Board was obtained prior to the research (CIRB Ref: 2018/2728). All interview data collected were anonymized and reported using individual codes.

Consent for publication

Not applicable.

Availability of data and materials

Data can be obtained from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

LM is the principal investigator of the study. LM conceived the study design, and conducted the data collection and analysis with PK. All authors critically revised the manuscript and approved the final version of the manuscript.

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