

Tackling Obesity at Preconception–

A Proposal for Targeted Interventions and Personalised Advertisements Targeting Expectant
Mothers

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Maternal overweight and obesity (MOO), along with immoderate gestational weight gain (GWG) are significant contributors to the obesity epidemic globally, and in Australia. In 2017, 25.6% of pregnant Australians were classified as overweight, and 20% as obese¹. Excessive GWG, the greatest contributors to MOO, is associated with increases in risks of pregnancy and childbirth complications such as gestational diabetes, caesarean delivery²⁻⁴, development of obesity and chronic diseases for both the mother and the child later in life⁵⁻⁷. Research shows that preventing GWG prevalence could significantly reduce adverse pregnancy and childbirth outcomes⁸. This paper will illustrate the most effective marketing investment for Cancer Council Victoria (CCV) to advertise their three-pronged GWG health campaign using government-influence, community-support and personalised advertisements, which are designed based on the Principles of Persuasion⁹, and the framing effects on health-warning³ and financial incentive program¹⁰. Utilising evidence-based targeted interventions and empirical-theory-inspired personalised advertisement messages, the proposed campaign and advertising medium will yield the most results in raising awareness of GWG and promoting healthy dietary behaviours among Victorian expectant mothers.

Until recently, mass media campaigns have been the norm in health promotion campaigns¹¹. Considerable effort worldwide has been dedicated to developing GWW interventions¹²; most have used mass media as their medium. Using television, radio, print and billboard advertising, accompanied by other community-intervention programmes, traditional health campaigns, and particularly obesity prevention campaigns have taken advantages of their high exposure to large proportions of wide populations and resulted in positive behaviour change and reduce risk-taking behaviour in most health-related concerns¹³⁻¹⁸. Interventions that used traditional media have seen some moderate successful outcomes in GWG among those who were

highly at risk or were aware of adverse pregnancy outcomes, such as gestational diabetes¹².

Despite its success, it also means that these campaigns have failed to capture a wider population of people who are not yet at risk of obesity and overweight but still need a healthier dietary change regardless.

Moreover, it was likely that due to the passive nature of these channels, encouraging results from exposure to mass media advertisements of obesity interventions fails to sustain once the campaigns finish^{16,19}. Short-term and limited impact of obesity campaigns with traditional ways of promotion²⁰ could stem from various barriers individuals, particularly pregnant women face in their attempt for healthy behaviour change and attainment. Examples are lack of detailed knowledge on planning nutrition meals²¹, lack of time for the realisation of unhealthy habit and positive habit formation²²⁻²⁴, financial demand, and lack of conversation with healthcare professionals²⁵. Therefore, unlike episodic health behaviours such as vaccination or cancer screening, targeted ongoing and habitual behaviours such as dietary habit, and physical activity for GWG intervention require greater investment and continuous exposure to ensure behaviours commitment that the traditional media approach cannot afford.

Amid the difficulties that health campaigns with mass media approach are facing, targeted advertisement approaches such as telephone-delivered or digital marketing interventions present tremendous opportunities to communication GWG prevention campaigns to a large audience. Recent studies find that personalised communication such as telephone-delivered interventions have larger, albeit short-term, impact on increasing physical activity than mass media approach²⁰, while well-design and tailored digital media messages show to be the most promising delivering channel²⁶. Despite a lack of empirical research on its usage and effectiveness in GWG health promotion campaigns, research in commercial and business topics

have shown optimistic results for digital marketing as the delivering channel²⁷⁻³⁰. Digital marketing channels, such as social media (SM) and search engines, present a fusion between the wide-reach benefit of mass media, and the interpersonal-communication advantage of digital media. They provide marketing tools to segment audience³¹ and create targeted, tailored, timely, yet cost-efficient intervention messages across all reproductive phrases. Not only can SM reach otherwise unattainable population (teenage mothers and ethnic minorities) using a lower budget than traditional approach³², it also allows for interactive conversations between healthcare professionals and the audience about the topic.

Moreover, SM opens platforms for the audience to share their personal barriers and difficulties, which are crucial in the process of personalising individual-targeted response messages. Additionally, the quick paced nature of SM advertising allows for faster review of the messages design and timely adjustment to any unsuccessful messages. Nevertheless, digital marketing faces the same problem with mass media communication²⁰ in difficulties to evaluate its success in isolation. As with traditional media campaigns, digital marketing promotion will need accompany from community-programmes and policy changes to achieve behaviour change and maintenance. Therefore, to capture the benefits and account for the drawback of targeted advertising, we propose a combination of community programmes and policy changes accompanying a digital media campaign promoting healthy GWG among expectant mothers in Victoria.

Media habit worldwide recently saw a substantial shift from traditional media to a more personalised avenue - digital media. With the unhealthy food and drink industry shifting their marketing investment from mass media marketing to digital marketing³³, it is strongly advised that healthy authority should also invest in targeted advertising approaches to compete for

screen-time and develop policies and community programmes that protect vulnerable population to unhealthy dietary marketing. Furthermore, a triad of interventions combining community, government support and targeted advertising can tackle more environment cues and social barriers that expectant mothers face, and thus, make the healthy behaviours the default and easier options to choose.

We propose CCV to create a GWG digital campaign to broadcast the Raising Children Network (RCN) project by the Department of Health and Human Services Victoria and promote financial incentive programs by private health insurances (PHIs) through Insurance Council Australia (ICA). The campaign aims to raise awareness of healthy GWG, and to encourage healthy dietary and physical activity among expectant mothers in Victoria. To capture both active and inactive information seekers, the GWG campaign will use Google AdWords and Facebook Ads Messenger to advertise three types of messages what utilise each of the following theories: Cialdini's Principles of Persuasion⁹, negative-impact-frame health-warning³⁴, and loss-frame financial incentives¹⁰ (Figure 1). Google AdWords and Facebook are chosen for their popularity among Australian internet users for search engines³⁵, and among Australian women aged 18-49 for SM network^{36,37}.

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Healthy pregnancy weight is not the same for everyone



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Being overweight increase your risk of pregnancy and childbirth complications



<https://raisingchildren.net.au/pregnancy/health-wellbeing/healthy-lifestyle/healthy-pregnancy-overweight>

Healthy pregnancy weight is not the same for everyone



<https://raisingchildren.net.au/pregnancy/health-wellbeing/healthy-lifestyle/healthy-pregnancy-overweight>

Join Government-funded Pregnancy Weight Loss Program today with Your Insurance Providers



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Figure 1. Advertisement Message Designs for the Campaigns. (Left to Right, Top to Bottom).

Insurance Google AdWords, GWG Google AdWords, Persuasive message Facebook ads, Negative-framing health-warning Facebook ads, Persuasive message with healthcare providers Facebook ads, Financial Incentive Promotion Facebook ads.

The campaign will occur in four two-month phases between January and December 2021. Two Google AdWords ads will be created and used throughout the campaigns. When an individual use the keywords that match ours to search on Google, Google AdWords will display ad icon and a website link, among a list of organic Google searches, redirecting the users to the RCN website and/or to ICA page where users can choose among participating PHIs to join a weight loss finance incentive program. The RCN provides supporting communities of expectant mothers and healthcare professionals, credible resources on recognising unhealthy habits, and managing GWG effectively through meal plans and detailed dietary guidelines. On the ICA website, the users will find options to join a government-funded 5-year weight loss program, in which they will be given \$120 incentive bonus per year on their extras cover. Weight change of participants will be individually managed through monthly meetings and doctor appointments with participating PHIs throughout the program. Each time the participants fail to meet their goals during monthly appointments, \$10 will be deducted from their account. This program design aims to take advantages of people's tendency to be loss averse and participating in new behaviours and fluid rewards to avoid feeling regret¹⁰.

On Facebook, CCV will pay for messages to be displayed on all devices to a predefined targeted audience, which, in this case, is female aged 18-49-year-old, with interests in pregnancy. While Google AdWords only allows for limited text-message, Facebook ads offer a venue for a more creative image design with longer text-message. Following Facebook restriction of the use of "weight gain", appropriate adjustments will be made to the wording of the ads. For each of the aforementioned theories, there will be two Facebook message designs published in each campaign phase. Reactions and comments on the ads will be reviewed, and adjustments will be

made as applicable to future designs in the next phases. During the campaign, staff will monitor Facebook users' reactions and comments on paid ads to responses promptly, redirect users to RCN and/or ICA website when applicable, and make adjustments to advertisement designs in the future phases. Staff will be trained to recognise and respond to privacy and profanity issues when problems arise.

Facebook ads on loss-framing financial incentive programs will run throughout the duration of the campaign to leverage the one-year waiting period of most pregnancy insurance plans in Victoria³⁸. Exposure to a GWG health campaign with credible sources of information and an evidence-based behaviour change plan at such an early stage will offer a wider window to healthy habit formation²⁴.

To strengthen the habit formation, Facebook ads on Persuasion Principles and negative-framing health-warning will run alternately through the four phases of the campaign. This schedule was chosen to isolate the effect of these two types of message.

The persuasive advertisement design will use variations of positive images of a group of diverse expectant mothers and healthcare professionals with the headline "Healthy pregnancy weight is not the same for everyone". They remind recipients of positive social norms in relation to a healthy pregnancy, set healthy GWG as a commitment, and associate it with positive self-efficacy. The provided website offers evidence-based resources, supporting and inclusive communities for expectant mothers, and opens conversations with healthcare providers on the topics.

The negative-framing advertisement design will consist of negative graphic and text health-warning, such as "Being overweight increase your risk of pregnancy and childbirth complications". The graphic image captures the users' attention, emphasises risks of GWG, and

delivers a priming effect to reduce unhealthy GWG behaviours. Refreshment of these images during the campaign will be made to sustain its effect.

We support and recommend the use of digital media as channels for delivering results-driven health messages, directing internet users to credible resources, and promoting evidence-based and government-funded financial incentives programs of private health insurances for our GWG campaign.

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