

breastfeeding problems and conflicting views about infant feeding and growth from grandparents reduced many mothers' confidence to breastfeed exclusively. For many new mothers, anxiety that exclusive breastfeeding provided insufficient nourishment prompted the introduction of formula before six months of age. Most mothers delayed introducing solid food to five to six months in the belief that this prevented the development of allergic diseases and gastrointestinal problems.

**Conclusion:** Chinese immigrant mothers in Australia need support to increase their confidence to breastfeed exclusively. To achieve this, culturally sensitive guidance is needed and the contradictions in advice given by Chinese grandparents and health professionals on infant feeding practices and healthy infant growth need to be recognised and addressed.

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**Obesity prevention in infants: A qualitative study exploring the influence of the Growing healthy program on infant feeding behaviours**



Rachel Laws<sup>1,\*</sup>, Eloise-Kate Litterbach<sup>1</sup>, Sarah Taki<sup>2</sup>, Georgina Russell<sup>2</sup>, Elizabeth Denney-Wilson<sup>2</sup>, Karen Campbell<sup>1</sup>

<sup>1</sup> *Institute for Physical Activity and Nutrition, Deakin University, Burwood, VIC, Australia*

<sup>2</sup> *Faculty of Health, University of Technology, Sydney, NSW, Australia*

**Introduction:** Infant feeding behaviours associated with obesity, such as formula feeding, feeding beyond satiety and early introduction of solids are potentially modifiable. Providing support to parents to promote healthy infant feeding using mobile phone apps (mHealth interventions) is a novel, yet untested approach. This qualitative paper explores the mechanisms by which an mhealth program (Growing healthy) may influence mothers' uptake of healthy infant feeding practices in the first nine months of life.

**Methods:** The 300 participants in the Growing healthy program were invited to participate in individual semi-structured telephone interviews when their infants were aged 6–12 months. Interviews explored the impact of the program on breastfeeding, best practice formula feeding and timing of introduction of solids – including the effect on key

behavioural mediators such as participants' capability (e.g. knowledge), opportunity (e.g. support and advice) and motivation (e.g. plans and emotions). Interviews were audiotaped, transcribed and thematic analysis performed.

**Results:** A total of 44 Mothers of infants aged 6–12 months were interviewed. Participants thought the program influenced their capability around feeding decisions, with videos considered more useful in guiding practical skills than written information. Participants also felt that the app provided a convenient, trustworthy and “round-the-clock” source of information enhancing support with infant feeding. Push notifications linking to information in the app encouraged healthy infant feeding practices as messages were timely and concordant with current feeding experiences. Participants reported less impact of the app on their motivations regarding feeding. When the information provided in the app was consistent with advice received by health professionals, uptake of appropriate infant feeding behaviours was higher.

**Conclusions:** This study provides new information about the mechanisms by which a novel mhealth intervention can influence healthy infant feeding practices to prevent excess weight gain in early childhood.

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**NADPH oxidase modulates leptin effects on gastric vagal afferent mechanosensitivity**



Hui Li<sup>1,2,\*</sup>, Claudine Frisby<sup>1,2</sup>, Gary Wittert<sup>1,2</sup>, Amanda Page<sup>1,2</sup>

<sup>1</sup> *University of Adelaide, Adelaide, SA, Australia*

<sup>2</sup> *Nutrition and Metabolism, South Australian Health and Medical Research Institute (SAHMRI), Adelaide, SA, Australia*

Leptin, produced locally in the stomach modulates peripheral gastric vagal afferent satiety signals by a paracrine mechanism of action. In lean, standard laboratory diet (SLD) fed mice, leptin potentiates gastric vagal afferent mucosal receptor responses to mucosal stroking. In contrast in mice with high fat diet (HFD)-induced obesity leptin has no effect on mucosal receptors and inhibits the response of tension receptors to stretch, an effect not observed in lean mice (J Physiol 2013;591:1921–34). The mechanism for this switch in effect of leptin in gastric vagal

afferents is unknown. Within the hypothalamus there is evidence to suggest that reactive oxygen species (ROS) production mediates the effect of leptin (Nat Med 2011;17:1121–7). Therefore we determined whether: (1) NOX mRNA and protein are expressed in vagal afferent neurones; and (2) we can mimic leptin effects in HFD conditions by inhibiting NADPH oxidase (NOX), the enzyme responsible for the synthesis of ROS.

The relative expression of NOX isoforms in vagal afferent neurons was NOX2 > NOX4 > DUOX2 > DUOX1 > NOX1 > NOX3. In addition, traced gastric vagal afferent neurones were NOX2 positive. Single fibre recordings of gastric vagal afferent tension and mucosal receptors were obtained from lean mice fed *ad libitum*. Leptin (1 nM) potentiated gastric vagal afferent mucosal receptor responses to mucosal stroking; an effect blocked by the NOX inhibitor apocynin (1 mM). Leptin had no effect on gastric vagal afferent tension receptors. However, in the presence of apocynin leptin reduced tension receptor responses to stretch.

In conclusion, NOX inhibition mimics the effect of leptin on gastric vagal afferent in HFD-induced obesity. Thus the switch in effect of leptin is likely due to disruption of leptin-NOX signalling pathways.

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### Nutritional adequacy of diets for adolescents with overweight and obesity: Considerations for dietetic practice



Natalie Lister<sup>1,2,\*</sup>, Megan Gow<sup>1,2</sup>,  
Kerryn Chisholm<sup>1</sup>, Alicia Grunseit<sup>1</sup>,  
Sarah Garnett<sup>1,2</sup>, Louise Baur<sup>1,2</sup>

<sup>1</sup> *The Children's Hospital at Westmead, Westmead, Australia*

<sup>2</sup> *University of Sydney, Sydney, Australia*

**Background and aims:** Adolescents have unique nutrient requirements due to rapid growth and development. High rates of obesity in adolescents require a variety of diet interventions to achieve weight loss under clinical supervision. The aim of this study is to examine the nutritional adequacy of energy restricted diets for adolescents.

**Methods:** Three popular diets were modelled for 7 days and assessed by comparing the nutrient profile to the Australian Nutrient Reference Values. Three diets were: [1] a standard energy restricted diet based on current dietary guidelines; [2] a hypocaloric diet aimed at increasing protein and improving carbohydrate quality; and [3] a modified alternate day fasting diet.

**Results:** Initial modelling revealed limiting nutrients (i.e. not meeting the recommended intakes) across the diets. Subsequent modelling was required to achieve nutritional adequacy for all three diets. The dietary guidelines diet design met most nutrient targets except essential fatty acids prior to subsequent modelling, however this diet also provided the highest energy (8.8 MJ vs 8.0 MJ and 6.8 MJ for the hypocaloric and modified alternate day fasting diet, respectively).

**Conclusions:** Energy restricted diets need careful consideration to meet nutritional requirements of adolescents. A variety of eating patterns can be adapted to achieve nutritional adequacy and energy restriction, however health practitioners need to consider adequacy when prescribing diet interventions for weight loss during adolescence.

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