Public Health Nutrition: 23(11), 1916–1923 doi:10.1017/S1368980020000452

Using a citizens' jury approach to determine a good nutrition resource for pregnant women

Kirsten J Coppell[1,*], Helen Paterson[2], Joanna Norton[1], Emma Jeffs[1] and E Jean C Hay-Smith[2]

[1]Department of Medicine, Dunedin School of Medicine, University of Otago, Dunedin 9054, New Zealand: [2]Department of Women's and Children's Health, Dunedin School of Medicine, University of Otago, Dunedin, New Zealand

Submitted 16 July 2019: Final revision received 21 January 2020: Accepted 4 February 2020: First published online 2 June 2020

Abstract

Objective: The development of user-friendly nutrition resources for pregnant women seldom involves end-users. This qualitative study used a citizens' jury approach to determine if our modification of a longstanding, frequently used dietitian-informed diet and diabetes booklet was deemed to be a good healthy eating resource for pregnant women.

Design: Midwives recruited thirteen first-time pregnant women not requiring specialist obstetric care or specialist dietetic advice for any reason. Participants were sent a copy of the modified healthy eating in pregnancy booklet prior to 'jury day'. Five women were unable to attend the citizens' jury citing reasons such as early labour. At the jury, five experts presented evidence. Participants adjourned, with an independent facilitator, to 'deliberate' as to whether the resource was suitable or not. The verdict was presented, and subsequent discussion was audio-recorded, transcribed and inductively content analysed.

Setting: Southland, New Zealand.

Participants: Pregnant women aged 19–35 years (*n* 8), of whom half had a household income <$NZ30 000.

Results: The verdict was 'Yes'; the resource was good. Three themes were derived: communication of health information, resource content and harm reduction in pregnancy. Based on these data, ways to enhance the quality and usability of the booklet were evident.

Conclusions: Citizens' juries can be used to obtain an independent assessment by end-users of health resources. Our modified diet and diabetes booklet was considered suitable for providing healthy eating advice to pregnant women. Inclusion of end-users' perspectives is critical for end-user relevant content, comprehension and resource credibility.

Keywords
Citizens' jury
Healthy eating
Gestational weight gain
Patient education handout
Pregnancy
Qualitative methods

Many women, even those with a healthy pre-pregnancy body mass index (BMI), often exceed their recommended gestational weight gain (GWG)[1], while a small proportion gain insufficient weight[2,3]. High pre-pregnancy BMI and excessive GWG as defined by the Institute of Medicine[1] are independently associated with adverse outcomes for both mother and baby[4]. These include gestational diabetes, pre-eclampsia, postpartum weight retention, macrosomia and large for gestational age babies[5–7].

In New Zealand (NZ), Lead Maternity Carers (LMCs), most of whom are midwives, are contracted to provide complete maternity services to pregnant women from the first trimester until 6 weeks postnatal. Nutrition education is part of the midwifery curriculum in NZ. In addition, the 2014 Guidance of Healthy Weight Gain in Pregnancy provides advice on weight gain during pregnancy for LMCs, and a list of resources[8]. The delivery of effective nutritional advice during pregnancy relates to not only knowledge and skills gained during and post-training, but also sufficient appointment time to discuss nutrition, and the availability of appropriate resources[9].

The main written resource on healthy eating for pregnant women in NZ is text dense[10]. Therefore, as part of a pragmatic LMC-delivered intervention designed to

*Corresponding author: Email kirsten.coppell@otago.ac.nz

achieve optimal GWG, we modified a longstanding, well-liked, and well-used diet and diabetes patient booklet published by the consumer organisation Diabetes New Zealand Inc. The *Diabetes and healthy food choices* booklet[11] was developed with dietitian expertise, and is a popular and widely used patient resource that was first published more than 10 years ago.

Rather than assume that our healthy eating in pregnancy resource would be liked and used by pregnant women, we undertook a citizens' jury (CJ) to determine if the booklet was considered a good written resource by pregnant women, and to seek recommendations for improving the booklet.

Methods

We used a CJ approach[12,13] because, unlike focus groups, it allows participants to learn about and become familiar with a particular topic (in this case healthy eating in pregnancy and the reasons for healthy GWG) by hearing from experts. This step facilitates a more informed discussion, an independent critique and consensus view from end-users. A checklist for reporting community juries was used[13].

The key roles of research team members were defined. The lead researcher and public health physician (K.J.C.) guided the research process, a research nurse (J.N.) contributed to the resource development and coordinated the study, and an Associate Professor in women's health (E.J.C.H-S.) contributed CJ expertise[14]. A Consultant Obstetrician and Gynaecologist and Senior Lecturer in women's health (H.P.) guided the expert topics.

Development of the written resource

Permission was obtained from Diabetes New Zealand Inc. to modify the booklet 'Diabetes and healthy food choices'[11] specifically for pregnant women. The overall structure of the booklet was maintained. Where necessary suitable images, with permission, were added or replaced, for example, the front cover picture of healthy food was replaced with a picture of mothers walking with their baby and children. With dietitian guidance, the text relating to diabetes-specific dietary advice was changed to healthy eating and weight gain in pregnancy-specific advice. Additional information about safe eating in pregnancy to reduce the risk of listeriosis, and brief advice about smoking cessation, recommended supplements, indigestion and heartburn, cravings and aversions, medications in pregnancy, allergy prevention, and physical activity were added.

Participants and recruitment

We sought to recruit 8–12 first-time pregnant women who were less than 36 weeks gestation, and able to speak and read English to fully participate in the jury. Women requiring specialist obstetric care or specialist dietetic advice for any reason were excluded.

All independent LMC midwives known to be practising in the Southland region, NZ (*n* 18) were phoned and invited to recruit women for the study. The purpose of the study and the CJ concept were explained. Five agreed to recruit eligible women. They were sent copies of the study participant information sheet, participant consent form and the inclusion/exclusion criteria. Study posters were displayed at the public library and at a local Māori health provider clinic. The posters included the researchers' contact details, stated that refreshments would be provided during the CJ and a $NZ30 grocery voucher would be offered at the conclusion of the CJ.

LMCs of women who indicated an interest in participating in the CJ obtained each woman's verbal consent to give their phone contact details to the research nurse (J.N.). Fourteen women were phoned to confirm their eligibility and interest in the study. One woman with type 1 diabetes was excluded. The study information sheet, a consent form and a schedule of events for the CJ were sent to the thirteen eligible women 1 month before the CJ. One week prior to the CJ, the women were sent a copy of the draft 'Health food and lifestyle choices in pregnancy and for families' booklet. They were instructed to review the booklet and not discuss its content with anyone. Eight women participated in the CJ. Reasons for non-attendance were early labour (*n* 1), a family emergency (*n* 1), rental housing inspection and no transport (*n* 1), and no reason given (*n* 2).

Jury preparation

The roles of the facilitator and experts, and their tasks are outlined in the online supplementary material. It was important that participating women had adequate knowledge about healthy eating and weight gain in pregnancy prior to deliberating about the booklet. The five key topic areas considered necessary to enable an informed discussion and decision-making about the resource were epidemiology of obesity in society, effects of excess GWG on maternal and birth outcomes, diabetes in pregnancy, body image and pregnancy, and sensible safe eating in pregnancy. Five topic experts (diabetes physician, public health physician, midwife, dietitian and obstetrician) accepted invitations to speak about their topic of expertise. The invitation outlined the research question, the expert's role and topic they would talk about, and the schedule of events, including the order of the expert presentations. They were asked to present current and balanced information, to avoid using jargon, and to prepare a clearly written 1–2 page outline of their presentation with key points for the jurors. There was no pecuniary gain for agreeing to be an 'expert'. Experts were not privy to the draft 'Health food and lifestyle choices in pregnancy and for families' booklet prior to the jury, that is, they did not see the booklet prior to preparing and delivering their presentations.

https://doi.org/10.1017/S1368980020000452 Published online by Cambridge University Press

A facilitator, who had prior experience with facilitating community engagement projects, managed the jury proceedings and chaired the deliberations of the jury, ensuring all members of the jury were involved, and any strong personality did not sway people and inhibit discussion. The facilitator, a newly qualified public health physician doing a PhD on an unrelated topic, had no expert knowledge on the subject, and acted independently from the 'experts' and the research team. The study protocol, including an outline of the facilitator's role, the schedule of proceedings for the CJ and copies of the experts' notes were sent to the facilitator 2 weeks prior to the CJ. The facilitator had no prior knowledge of the draft written resource.

Citizens' jury proceedings

The CJ was a single, 6-h session, which took place between 10.00 and 16.00 hours on Saturday 21 May 2016 in a meeting room at the public library in Invercargill city, NZ. The eight pregnant women (jurors) were welcomed and given name badges. Written consent was obtained from each woman prior to the CJ beginning. They completed a brief anonymous questionnaire about their sociodemographic background. Copies of the draft booklet were available.

The facilitator undertook the introductions, outlined the day and stated the aim of the jury – that the key role of jurors was to determine if the modified Diabetes New Zealand Inc. resource was deemed (by them) to be a good healthy eating resource for pregnant women and their families – Yes (and why) or No (and why). The five expert presentations followed, each lasting 20 min with 5 min for questions. Prior to each talk, the jurors were given an outline of the presentation. Two researchers (K.J.C. and J.N.) made brief notes about the questions asked by jurors and any subsequent discussion.

After lunch, the facilitator and jurors adjourned to a separate closed room to deliberate. A board (flip chart), pens and paper were available for jurors to facilitate their discussions, and record all relevant discussion points. The facilitator chaired the deliberations. First, the facilitator worked with the jury to prepare and record a values statement, which defined how members of the jury would behave in group discussions and decision-making to ensure jurors respected each other's opinions, and any criticism was related to content and not individuals. The aim of the jury was re-iterated, and they were asked to rank their ideas about what they liked about the booklet, and to provide recommendations for improving the booklet. The jurors elected a spokesperson to deliver the verdict, and a scribe to record the discussion points from within their group.

The jury took 1 h to reach a verdict. The spokesperson presented the verdict to the researchers, followed by recommendations, then a discussion, which was audio-recorded with permission. J.N. also took notes. The audio-recording was independently transcribed and transcription checked for accuracy by K.J.C. and J.N.

Data analysis

Data were content analysed using a general inductive approach[15] with the aim of identifying and describing key factors that helped understand what was important about the resource for women, including what they thought could be improved further. J.N., H.P. and K.J.C. read the transcript and observer's notes multiple times in order to become very familiar with the data. J.N. and H.P. coded the data, which was reviewed by K.J.C., then discussed together during several meetings. Each meaning unit (phrase, sentence, line or paragraph containing a single idea) was reviewed and coded descriptively. Codes were added as new ideas were found, and existing codes modified, if needed, to separate or combine ideas. Next, codes were grouped into categories, sub-themes, then themes. Each theme had a core concept, and sub-themes were components of it. Developing themes were reviewed, discussed and refined by J.N., H.P. and K.J.C. An iterative process determined the final sub-themes and themes.

Results

The women were aged 19–35 years. Six women self-identified as NZ European, one Māori and one Filipino. One woman had no school qualifications and half had a household income of $NZ30 000 or less. Two women had a family history of diabetes. The main sources of women's pregnancy-related nutritional information are shown in Table 1.

The recorded values statement was 'respectful and not judgemental, let everyone talk'. The verdict delivered was 'Yes', that the draft booklet was considered good, and would be useful. However '. . . a few small tweaks would make it even better . . . .' (line 869). Three core themes each containing sub-themes were derived.

Table 1 The main sources of nutritional information during the women's current pregnancy

Source of information	Number of women
Midwife	3
General practitioner	1
Practice nurse	0
Antenatal group	0
Internet	4
Pregnancy books	3
Pregnancy-specific magazines	1
Other magazines	1
Other – 'friends that have already been pregnant before', 'family members', 'dietitian', 'word of mouth', 'Bounty book'*	6

*Bounty is a non-governmental provider of no cost educational resources to expectant and new parents throughout New Zealand. Bounty produces two written educational resources ('Your Pregnancy' and 'Your Baby') which are locally referred to as the 'Bounty book'. http://bounty.co.nz/ (accessed 17 December 2019).

https://doi.org/10.1017/S1368980020000452 Published online by Cambridge University Press

Theme 1 – Communication of health information

Overall the women found the draft booklet 'was a good clear and helpful resource.' (line 20), and '. . . it had all the information that was needed and it [was] a good depth of information so it wasn't too much or too little, it was good . . . .' (lines 594 and 595).

Presentation of health information

The presentation of information with a mix of both text and pictures helped to comprehend the content.

> . . . just really easy . . . you know it's better 'cause it's visual rather than just written . . . (lines 185 and 186).

They also liked the pregnancy-specific '. . . wee tips in the book . . . they're really really helpful' (lines 157 and 158).

Stylistic and design features

The women felt the booklet 'was a nice size' (line 593). They particularly liked 'the pictures' (line 181), including the photo on the front cover, the healthy plate model and the traffic light system which was readily understood.

> We did really like the traffic light scene, the what we should eat, what we should avoid and then what we don't eat. (lines 67 and 68)

Reading food labels was considered a complex task by the women, but they understood the explanation in the booklet.

> . . . it's hard to understand anyway but you's made it simple enough . . . (line 579)

> . . . that's quite a complicated thing that you're trying to simplify so it is as good as it can be. (lines 581 and 582)

Recommended changes to improve the format, likeability and readability of the booklet included reducing the number of words on the front page, removing the reference to Diabetes New Zealand Inc. so it was clear the booklet was for pregnant women, increasing the text size of the pregnancy-specific tips and moving the guide on how many portions of individual foods from the back to the front.

Theme 2 – Resource content

The booklet was considered a good source of information about healthy eating in pregnancy that would most likely be used throughout pregnancy.

> . . . it's one of those things that I'd probably refer back to quite often just like when I am cooking food or making something to eat . . . . (lines 976 and 977)

It was apparent that not all women were informed about what would be considered 'common pregnancy knowledge'. Two women were unaware that it was unnecessary to take folate supplements beyond the first trimester.

> '. . . I didn't know you stopped folic acid . . . .' (line 779) '. . . Yeah, no [me] neither but I still kept taking it so that was good to read that (laughter) . . . ' (line 783)

Portion control

Becoming aware of, and familiar with, portion sizes and number of recommended servings for different macronutrients and specific foods was new and helpful.

> The thing I found really cool is . . . . . how you showed us like a portion of meat is about this size of your palm, it's good that they show that in the book, . . . (lines 588 and 589)

The plate model was considered to be an excellent pictorial tool to guide healthy eating.

> . . . really liked that kind of plate diagram . . . that says this much of your plate should be vegetables, this much should be meat . . . . . .again just clear about . . . .what you're supposed to eat and how much . . . (lines 200–203)

Rationale for advice

Reasons why some foods, such as hummus, should not be eaten was important, and the women wanted this information included in the booklet.

> . . . when you say don't eat hummus, the feeling was that well we would want to know why we shouldn't eat hummus rather than just telling us don't eat hummus, tell us why so that [we] know . . . . . (lines 81–85)

Additional healthy eating support tools

The women thought additional tools to help guide healthy eating and 'track' what they were eating during their pregnancy and postpartum could be useful.

> . . . .an extra add-on that could be good . . . . . like a template of tracking your food with something, it would be quite handy . . . .to realise how much you're eating.' (lines 794–796) and '. . . .probably would be good just to remind you of portion sizes . . . . . .so you don't get a bit carried away . . . . (lines 888 and 889).

Breast-feeding and postpartum weight loss

The women were conscious of the need to have healthy eating habits, not only during, but also after their pregnancy. They considered the inclusion of dietary advice for breast-feeding and postnatal weight loss would be very useful, thereby providing a single source of reliable healthy eating information that would be '. . . helpful for pregnancy and after pregnancy . . . ' (line 1026) '. . . .with everything you need to know in the one booklet . . . ' (lines 695 and 696)

Theme 3 – Harm reduction in pregnancy

Healthy and safe choices of foods and drinks were important, and recommended foods and foods to be avoided were mostly communicated clearly.

https://doi.org/10.1017/S1368980020000452 Published online by Cambridge University Press

what I can't eat is gonna be obviously the red title. (lines 75 and 76)

Alcohol

All women considered the inclusion of safe alcohol limits for both men and women was confusing and could be potentially misleading.

> .... where we talk about that alcohol, I don't.....think it's necessary to have For Men..... when I was reading it, I missed out the For Men bit and I read....limit your alcohol to three drinks or fewer every day....and I was like oh well that's still quite a bit,....it's supposed to be a pregnancy like pamphlet and I didn't really think that men would probably agree to it..... keep it to the mother's side of it, ...I don't really think it's necessary to have a men's part in there...

They strongly advised that information about alcohol consumption in pregnancy needs to be very clear, that is, drinking alcohol in pregnancy is not recommended and there is no known safe limit.

> ....have down there alcohol's not recommended.... (lines 305 and 306)

Healthy and safe eating

The women considered the booklet focussed primarily on home cooking, and that there needed to be more suggestions for suitable healthy options when buying takeaway meals or dining at a restaurant.

> ....this is all about home cooked stuff and..... the feeling was that some [takeaway meals] are obviously better than others and so some guidance around those options might be useful. (lines 56–59)

Women were aware, and concerned, that some foods increased the risk of the listeriosis during pregnancy, and that the booklet did not clearly convey whether all cheeses were safe to eat.

> With pasteurised and unpasteurised cheese, all my friends who are pregnant [say] you can eat it if it's pasteurised but I don't know if that's absolutely clear? (lines 414 and 415)

Food hygiene was recognised as an important component of safe eating, and they requested information on hand washing prior to food preparation and eating should be included.

Discussion

We modified a popular diabetes and diet written resource to provide pregnancy-specific healthy eating guidance, and engaged with first-time pregnant women to seek their views about the resource using a CJ approach. The women unanimously agreed the resource was good. They particularly liked the overall clear presentation of information, including the use of traffic lights to indicate healthy, less healthy and unhealthy foods, the healthy plate model and how to read food labels which they considered was a complicated subject. The inductive analysis of the women's discussion generated three themes about communicating health information, content of the resource and harm reduction in pregnancy. The data also provided recommendations to enhance the quality and usability of the booklet (Table 2).

Credible sources of information

While there is a plethora of written and electronic information available on healthy and safe eating in pregnancy, as well as information from friends and family, we were surprised that all participants wanted to take the draft booklet home. This may reflect the inconsistent and contradictory

Table 2 Changes made to the booklet following the citizens' jury

Presentation of information
Shortened the title of the booklet
Removed the Diabetes New Zealand logo from the front cover
Increased the font size of the main headings
Increased the font size of the food safety messages and tips
Increased the font size of text explaining the importance of healthy weight gain in pregnancy and the current weight gain recommendations
Added image examples of three different foods containing 200 energy, the additional energy required during pregnancy
Content
Added a statement that the whole family can eat the same healthy food
Added an explanation as to why some foods, for example, hummus, are not to be eaten during pregnancy
Added examples of safe foods that could be purchased when eating out
Added a separate section on postpartum weight loss
Added a separate section on foods and fluids to consume when breast-feeding
Added a statement that consumption of alcohol is best avoided when breast-feeding
Removed alcohol consumption recommendations for non-pregnant and non-breast-feeding women
Removed alcohol recommendations for men

https://doi.org/10.1017/S1368980020000452 Published online by Cambridge University Press

information about diet during pregnancy available to women[16,17], and the possibility that they considered us to be experts in the field and therefore a trusted source of information. While information sources are often judged differently, health professionals are generally considered trustworthy[18]. In a study that explored nutrition-related seeking behaviours among a multi-ethnic group, participating pregnant women 'navigated' between three sources for information: (i) antenatal carers whom they considered to be the most reliable and trustworthy; (ii) the internet which was more accessible and the most used and (iii) family and friends ('social surroundings') whose information they doubted[19].

The women in our study considered the modified resource to be a credible source of clearly presented, relevant and easily understood information. The layout is colourful and appealing, and the key messages are presented simply. This may stem from the fact that a consumer organisation led the development of the original *Diabetes and healthy food choices* booklet[11] with the process including both end-users and dietitian expertise. The involvement of end-users ensures information is accessible, readable and usable[20].

Resource content

The pregnancy-specific content of the booklet stemmed from what we considered would be important components of a good guide for healthy safe eating in pregnancy and optimal GWG. While we sought to balance providing too little and too much information, the women were very clear that breast-feeding and postpartum weight loss could not be disentangled from pregnancy. Hence, information on healthy eating for breast-feeding and postpartum weight loss has since been added. All this information in one document was deemed essential.

Pregnancy is considered a 'teachable moment', a naturally occurring life transition(s) or health event(s) thought to motivate individuals to spontaneously adopt risk-reducing health behaviours[21]. Therefore, one underpinning consideration when we modified the booklet was that the booklet may be useful for not only pregnant women but also their family[22,23]. As part of this concept, we considered the inclusion of alcohol intake recommendations for men would be a good idea. However, participating women unanimously disagreed, identifying the potential to confuse the advice about alcohol intake for pregnant women, and cause harm to their babies. This illustrates how the inclusion of end-users' perspectives and integrating their views in the development of education resources is critical for end-user relevant content, comprehension and resource credibility[20].

Safe food, safe food preparation and safe alcohol intake in pregnancy were important issues for all women in our study. This is consistent with findings from a Canadian study which assessed patient information channels and knowledge of physical activity and nutrition during pregnancy among 147 women, most of whom wanted to improve their knowledge and understanding of foods that they could eat to improve their baby's health, and which foods to avoid during pregnancy[24].

End-user involvement

Patients, or in our situation healthy pregnant women, are increasingly involved in the development of health-care resources and services, community interventions[25,26], and the development of patient information leaflets and electronic resources in a range of settings[27–29], including the original *Diabetes and healthy food choices* booklet[11]. Typically patient and consumer involvement is through meetings, fora and focus groups[25,28,29]. In the current study, we chose to seek consumer views and the answer to a specific question using a CJ approach. Although this approach is usually utilised to inform policy[30,31], the jury process provided a useful framework to enable pregnant women to develop a deeper understanding and engagement with the topic of healthy eating in pregnancy. The expert presentations provided more detailed information on the topic, and participants were encouraged to ask questions to enhance their understanding. This enabled the women to knowledgeably discuss the booklet, and importantly, without any influence from those who drafted it.

Strengths and limitations

A key strength of our study was the inclusion and involvement of women from a wide range of educational and sociocultural backgrounds, and they all fully engaged and contributed substantially to all discussions. The sociodemographic characteristics of the participants were not known to the researchers until completion of the jury. We adhered to recommended methods for organising and running a CJ, and we used the recently published and recommended checklist for the reporting of community juries[13]. A limitation is that it was not possible to recruit a random sample of pregnant women to ensure good community representation as due to confidentiality, no such accessible register exists in NZ. Recruitment was therefore mostly through local LMC midwives, whom were specifically asked to invite women from different ethnic and sociodemographic backgrounds. Although thirteen women accepted the invitation to participate in the CJ, five did not attend and three because of unexpected events on the day of the CJ. The involvement of fewer women than expected may have influenced the jury decision and limited the scope of feedback comments. Repeating the CJ with a larger group of women would provide an opportunity to assess changes made to the booklet, as well as specifically enquire as to how they would prefer the booklet information to be presented, either in hardcopy or electronically.

https://doi.org/10.1017/S1368980020000452 Published online by Cambridge University Press

Conclusion

Our modification of a well-liked, longstanding diabetes consumer healthy eating resource was deemed to be a good nutrition resource by healthy pregnant women. Clearly presented, evidence-based written health information on healthy weight gain in pregnancy is important and is valued. The inclusion of end-users' perspectives and integrating their views in the development of resources is critical for inclusion of end-user relevant content, comprehension and resource credibility. Well-written health information resources given by health professionals at the appropriate time (in this situation, early in pregnancy)[32] are more likely to improve consumer knowledge, and increase the likelihood of better adherence to recommended diet and lifestyle advice. However, it would be necessary to conduct a randomised controlled trial to assess any impact on behaviour change and health outcomes for mother and baby.

Acknowledgements

Acknowledgements: We thank Diabetes New Zealand Inc. who gave us permission to modify their booklet, 'Diabetes and healthy food choices' for the purposes of providing nutritional advice to pregnant women, and Kiri Sharp who provided dietetic expertise when modifying the booklet. We are grateful to the women who actively engaged and participated in the current study. We extend our thanks to Rose Miller, Kraftwork Graphic Design Studio who made our changes to the Diabetes New Zealand booklet, the Lead Maternity Carer midwives (Bernie Archer, Kathy Harrington, Bonnie Kite, Jo May and Terryll McDowell) who helped to recruit pregnant women to the study, Sarah Donald who facilitated the citizens' jury, and experts, Michelle Downie, Marion Poore and Pauline Dawson who presented 'evidence' to the jury. *Financial support:* The current work was supported by a University of Otago Research Grant and an Otago Southland Diabetes Research Trust grant-in-aid. The University of Otago and the Otago Southland Diabetes Research Trust had no role in the design/conduct of the study, collection/analysis/interpretation of the data and preparation/review/approval of the manuscript. *Conflict of interest:* There are no conflicts of interest. *Authorship:* K.J.C. conceived the resource development idea, drafted the resource with J.N. and obtained funding to undertake the study. E.J.C.H-S. conceived the study design in discussion with K.J.C., H.P. and J.N. J.N. organised and coordinated the citizens' jury. E.J. provided dietetic review of the resource and contributed to the conduct of the citizens' jury. K.J.C., H.P. and J.N. analysed the data with critical review by E.J.C.H-S. K.J.C. and J.N. wrote the first draft of the manuscript. All authors contributed to and approved the final manuscript. *Ethics of human subject participation:* The current study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the University of Otago Human Ethics Committee Health (Ref.: H16/047). Written informed consent was obtained from all participating women.

Supplementary material

For supplementary material accompanying this paper visit https://doi.org/10.1017/S1368980020000452

References

1. Institute of Medicine (IOM) and National Research Council (NRC) (2009) *Weight Gain During Pregnancy: Reexamining the Guidelines, Weight Gain During Pregnancy: Reexamining the Guidelines*. Washington, DC: The National Academies Press.
2. Chung JG, Taylor RS, Thompson JM *et al.* (2013) Gestational weight gain and adverse pregnancy outcomes in a nulliparous cohort. *Eur J Obstet Gynecol Reprod Biol* **167**, 149–153.
3. Dzakpasu S, Fahey J, Kirby RS *et al.* (2015) Contribution of prepregnancy body mass index and gestational weight gain to adverse neonatal outcomes: population attributable fractions for Canada. *BMC Pregnancy Childbirth*. Published online: 5 February 2015. doi: 10.1186/s12884-015-0452-0.
4. Ramachenderan J, Bradford J & McLean M (2008) Maternal obesity and pregnancy complications: a review. *Aust NZ J Obstet Gynaecol* **48**, 228–235.
5. Catalano PM & Ehrenberg HM (2006) The short- and long-term implications of maternal obesity on the mother and her offspring. *BJOG* **113**, 1126–1133.
6. Dodd JM, Grivell RM, Nguyen AM *et al.* (2011) Maternal and perinatal health outcomes by body mass index category. *Aust N Z J Obstet Gynaecol* **51**, 136–140.
7. HAPO Study Cooperative Research Group (2010) Hyperglycaemia and Adverse Pregnancy Outcome (HAPO) Study: associations with maternal body mass index. *BJOG* **117**, 575–584.
8. Ministry of Health (2014) *Guidance for Healthy Weight Gain in Pregnancy*. Wellington: Ministry of Health. https://www.health.govt.nz/publication/guidance-healthy-weight-gain-pregnancy (accessed December 2019).
9. Fieldwick D, Paterson H, Stephen M *et al.* (2014) Management of excess weight in pregnancy in Otago, New Zealand: a qualitative study with lead maternity carers. *N Z Med J* **127**, 27–37.
10. Ministry of Health (2010, Revised 2017) *Eating for Healthy Pregnant Women*. Wellington: Ministry of Health. https://www.healthed.govt.nz/resource/eating-healthy-pregnant-womenngā-kai-totika-mā-te-wahine-hapū (accessed December 2019).
11. Diabetes New Zealand (2014) *Diabetes and Healthy Food Choices*. Wellington: Diabetes New Zealand Inc. https://www.diabetes.org.nz/food-and-nutrition (accessed December 2019).
12. The Jefferson Center (2017) Citizens Juries 2017. https://jefferson-center.org/ (accessed December 2019).
13. Thomas R, Sims R, Degeling C *et al.* (2017) CJ Check Stage 1: development and testing of a checklist for reporting community juries – Delphi process and analysis of studies published in 1996–2015. *Health Expect* **20**, 626–637.

14. Herbison P, Hay-Smith J, Paterson H *et al.* (2009) Research priorities in urinary incontinence: results from citizens' juries. *BJOG* **116**, 713–718.
15. Thomas DR (2006) A general inductive approach for analyzing qualitative evaluation data. *Am J Eval* **27**, 237–246.
16. Ferrari RM, Siega-Riz AM, Evenson KR *et al.* (2013) A qualitative study of women's perceptions of provider advice about diet and physical activity during pregnancy. *Patient Educ Couns* **91**, 372–377.
17. Wennberg AL, Lundqvist A, Hogberg U *et al.* (2013) Women's experiences of dietary advice and dietary changes during pregnancy. *Midwifery* **29**, 1027–1034.
18. Hesse BW, Nelson DE, Kreps GL *et al.* (2005) Trust and sources of health information: the impact of the Internet and its implications for health care providers: findings from the first Health Information National Trends Survey. *Arch Intern Med* **165**, 2618–2624.
19. Garnweidner LM, Sverre Pettersen K & Mosdol A (2013) Experiences with nutrition-related information during antenatal care of pregnant women of different ethnic backgrounds residing in the area of Oslo, Norway. *Midwifery* **29**, e130–e137.
20. Coyne I, Prizeman G, Sheehan A *et al.* (2016) An e-health intervention to support the transition of young people with long-term illnesses to adult healthcare services: design and early use. *Patient Educ Couns* **99**, 1496–1504.
21. McBride CM, Emmons KM & Lipkus IM (2003) Understanding the potential of teachable moments: the case of smoking cessation. *Health Educ Res* **18**, 156–170.
22. Everett KD, Bullock L, Gage JD *et al.* (2006) Health risk behavior of rural low-income expectant fathers. *Public Health Nurs* **23**, 297–306.
23. Everett KD, Bullock L, Longo DR *et al.* (2007) Men's tobacco and alcohol use during and after pregnancy. *Am J Mens Health* **1**, 317–325.
24. Ferraro Z, Rutherford J, Keely EJ *et al.* (2011) An assessment of patient information channels and knowledge of physical activity and nutrition during pregnancy. *Obst Med* **4**, 59–65.
25. Crawford MJ, Rutter D, Manley C *et al.* (2002) Systematic review of involving patients in the planning and development of health care. *BMJ* **325**, 1263.
26. Gooberman-Hill R, Horwood J & Calnan M (2008) Citizens' juries in planning research priorities: process, engagement and outcome. *Health Expect* **11**, 272–281.
27. Prothero L, Georgopoulou S, de Souza S *et al.* (2017) Patient involvement in the development of a handbook for moderate rheumatoid arthritis. *Health Expect* **20**, 288–297.
28. Redfern J, Ellis E, Briffa T *et al.* (2006) Development and testing of innovative patient resources for the management of coronary heart disease (CHD): a descriptive study. *BMC Health Serv Res.* Published online: 6 August 2006. doi: 10.1186/1472-6963-6-95.
29. Solomon P, Salbach NM, O'Brien KK *et al.* (2018) Collaborative development of an educational resource on rehabilitation for people living with HIV. *Disabil Rehabil* **40**, 2671–2676.
30. Street J, Duszynski K, Krawczyk S *et al.* (2014) The use of citizens' juries in health policy decision-making: a systematic review. *Soc Sci Med* **109**, 1–9.
31. Wise J (2017) Citizens' juries for health policy. *BMJ* **357**, j2650.
32. Olander EK, Atkinson L, Edmunds JK *et al.* (2012) Promoting healthy eating in pregnancy: what kind of support services do women say they want? *Prim Health Care Res Dev* **13**, 237–243.

Public Health Nutrition

https://doi.org/10.1017/S1368980020000452 Published online by Cambridge University Press