

New Zealand LMC midwives' approaches to discussing nutrition, activity and weight gain during pregnancy

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ABSTRACT

Background: Excessive weight gain during pregnancy can lead to increased retention of weight postpartum and the risk of becoming overweight or obese later in life. Obesity is an increasing problem within New Zealand society and being overweight or obese during pregnancy increases risks for both the mother and the baby. In New Zealand, primary maternity care is largely provided by midwives in the role of Lead Maternity Carer (LMC). These midwives provide continuity of maternity care and information to women to support informed decision making and healthy lifestyles choices. **Aim:** To explore how LMC midwives discuss nutrition, activity and weight gain when providing primary maternity health care to pregnant women in New Zealand. **Method:** A nationwide survey was undertaken with a cohort of LMC midwives in New Zealand to identify what advice and information were being provided to pregnant women about nutrition, activity and weight gain. An electronically administered survey was distributed to eligible midwives through the New Zealand College of Midwives membership database. Descriptive statistics were used to describe survey responses; the large volume of free text data were analysed using a qualitative inductive approach. **Results:** A total of 428 LMC midwives responded, giving a response rate of 42.9%. Nearly all these midwives discussed nutrition (97.6%) and activity (94.3%) with women during pregnancy. The majority of midwives (70%) calculated the woman's body mass index (BMI) at pregnancy registration. Recommendations for weight gain varied dependent on the woman's BMI; the respondents in this study generally recommended lower weight gain targets than the updated Institute of Medicine (IOM) (2009) published guidelines. Free text data

themes identified that midwives customized their care to the individual woman. Midwives discussed weight gain and obesity as a sensitive issue which needed an individualised approach. Obesity was considered to be a wider societal issue that requires a broader national response. **Conclusion:** Midwives in New Zealand are discussing nutrition, activity and weight gain during pregnancy with women. Changing established lifestyles requires a wider societal approach.

KEY WORDS

Obesity, midwifery care, gestational weight gain, nutrition, exercise.

INTRODUCTION

Obesity is a growing problem in New Zealand with a third of adults being obese (Ministry of Health [MOH], 2008). Maternal overweight and obesity are associated with increased risks of adverse pregnancy outcomes such as increased risk of miscarriage, hypertensive disorders of pregnancy including pre-eclampsia, gestational diabetes and maternal mortality (Catalano & Ehrenberg, 2006; HAPO Study Cooperative Research Group, 2010; Dodd, Grivell, Nguyem, Chan & Robinson, 2011). There is also an increased risk of induction of labour and caesarean birth for the mother whilst the risks for the baby include macrosomia, adiposity and hyperinsulinaemia even after adjustment for maternal glycaemia, increased need for resuscitation and increased incidence of congenital abnormality (HAPO group, 2010; Catalano & Ehrenberg, 2006; Dodd et al., 2011).

Excessive weight gain during pregnancy has been shown to be related to high postpartum weight retention and the development of obesity later in life (Phelan, 2010). The woman's beliefs about appropriate gestational weight gain appear to be related to her pre-conception weight and can influence the actual weight gain in pregnancy (Stotland et al., 2005); with international studies finding that a woman's actual pregnancy weight gain has been strongly associated with the advice given by her health provider (Stotland et al., 2005). Despite this finding, a third of women were given incorrect advice and between 27-33% of women were given no advice about gestational weight gain in pregnancy by their health provider (Cogswell, Scanlon, Bein & Schieve, 1999; Stotland et al., 2005). Body Mass Index (BMI) is a widely used assessment measure of relative weight which is based on an individual's weight and height. Women with higher BMI designated higher target weight gains than women who weighed less (Stotland et al., 2005; Phelan et al., 2010).

Phelan (2010) suggests that pregnancy is a "teachable moment" for the promotion of healthy eating and physical activity behaviours among women. The label "teachable moment" has been used to describe naturally occurring life transitions or health events that are thought to motivate individuals to spontaneously adopt risk-reducing health behaviours (McBride, Emmons, & Lipkus, 2003). Pregnancy is a time when many women are concerned about the wellbeing of their babies and are potentially more open to consider adopting a healthier lifestyle. It is also a time when they have frequent contact with a healthcare provider. By providing information

and appropriate advice about optimal nutrition, exercise and appropriate gestational weight gain, healthcare providers have the potential to influence women to make longer term lifestyle choices. This could potentially reduce weight gain during pregnancy, and the incidence of obesity in women and their children (Phelan, 2010; Ministry of Health [MOH], 2006).

New Zealand maternity care is different from many other countries in the world (Rowland, McLeod, & Forese-Burns, 2012). The majority of primary maternity care is provided by registered midwives in the role of LMCs. These midwives provide continuity of care from early pregnancy, through the labour and birth and up to six weeks postpartum. For women with risk factors LMC midwives work in collaboration with specialists such as obstetricians and paediatricians guided by a referral process agreed through a multidisciplinary process (MOH, 2011). This model of maternity care means that the LMC midwife is able to build a close relationship with a woman during her pregnancy, developing trust and preparing the woman for the labour, birth and becoming a parent. Thus LMC midwives have an opportunity to tap into that “teachable moment” and potentially effect change to support healthy lifestyles and better outcomes for both the woman and her family.

In 1990, the United States Institute of Medicine (IOM) published guidelines on recommended ranges of gestational weight gain based on maternal BMI to optimise fetal growth and maternal / infant outcomes (IOM, 1990). However a large Swedish population study subsequently showed that there was a decreased risk of adverse maternal and neonatal outcomes associated with lower pregnancy weight gain limits than the IOM recommendations, particularly in women who were obese (Cedegren, 2007). In 2009, the United States IOM revised their recommendations for ranges of weight gain in pregnancy to include a specific range of weight gain for obese women (IOM, 2009). In 2010, in the United Kingdom, the Royal College of Obstetricians and Gynaecologist (RCOG, UK) in conjunction with the Centre for Maternal and Child Enquiries committee published a guideline for Management of Women with Obesity in Pregnancy which used the 2009 IOM guidelines (CMACE/RCOG, 2010). In New Zealand, the Ministry of Health (2006) Food and Nutrition Guidelines for Healthy Pregnant and Breastfeeding women incorporated the IOM 1990 gestational weight gain ranges and were used to guide practice. These guidelines have subsequently been updated to incorporate the updated 2009 IOM guidelines for weight gain during pregnancy (MOH, 2014). Although the MOH guidelines have been in place since 2006, little is known about midwives’ actual practice in relation to the advice they give women about weight gain, nutrition and activity in pregnancy.

The aim of this study was to establish an understanding of the practice and knowledge of midwifery Lead Maternity Carers in New Zealand concerning nutrition, activity and weight gain advice during pregnancy.

METHODS

This was a nationwide cohort survey of midwife Lead Maternity Carers in New Zealand concerning obesity in pregnancy using an electronic survey.

Survey tool development

A questionnaire was developed based around the recommendations within the Management of Women with Obesity in Pregnancy guideline published by CMACE/RCOG (2010). The survey was initially trialled with 10 midwives working within a single regional hospital in New Zealand. Superfluous questions were removed and where required wording was changed to aid clarity. A further pilot survey was sent out electronically to 10 randomly selected midwives who were identified as LMCs with the New Zealand College of Midwives (NZCOM). No changes were made to the questionnaire following the second pilot study.

The final questionnaire included a section to obtain participant demographic data including area of work, years of experience, age group and ethnicity. Sections included advice given to pregnant women regarding diet, exercise and weight gain, and questions to elicit usual practice to obtain height and weight measurements. A final section included questions

regarding the LMC’s knowledge of published guidelines for gestational weight gain and what they would recommend for weight gain in pregnancy. For the majority of the questions, the response options were: never, usually not, sometimes, almost always, and all the time.

An overview of the study and a link to the survey website were sent to all eligible midwives within the NZ College of Midwives membership database by the Survey Monkey administrator (www.surveymonkey.com). Midwives, who were members of the College, identified as being self-employed (and therefore working as a LMC) and had an available email address, were approached to participate in the study. Each survey was uniquely tied to the email address to ensure that responses were not duplicated, with confidentiality and anonymity maintained. The initial survey was followed up with 3 further reminders over a five month period between November 2012 and April 2013. Analysis and descriptive statistics were undertaken using Microsoft Excel. For clarity, the denominator used was the number of participants answering each question. There was a large volume of free text responses provided by the midwives when responding to the survey. These qualitative data were analysed separately by two of the investigators (AP & LD) using a general inductive approach to develop themes (Thomas, 2006).

Ethical approval was obtained from the New Zealand Ministry of Health Multi Region Ethics Committee. Study reference number: MEC/11/EXP/126.

RESULTS

A total of 1067 midwives were identified as self-employed on the NZCOM database. Of these, 32 did not have an available email address and 39 email addresses were invalid; therefore the 996 midwives with valid email addresses were sent an invitation to participate in the study. Seventeen respondents identified that they did not want to participate in the survey and therefore opted out of the study.

A total of 428 responses were obtained, including three responses from the electronic pilot. This gives a response rate of 42.9% (428/996). Not all questions were fully completed; 389 participants completed all the questions in the survey (Figure 1).

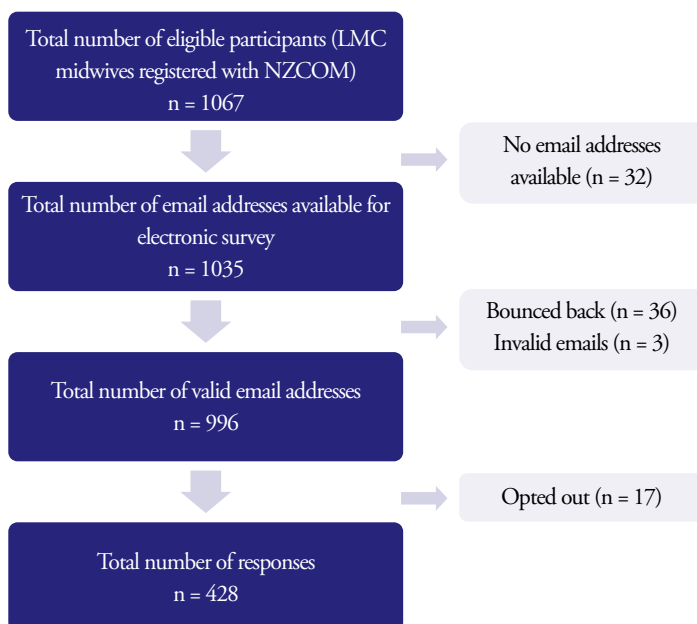


Figure 1: Flow diagram of participant recruitment and responses

Participants were asked about their main area of work (Table 1). Of the 423 midwives who responded to this question, 201 (47.5%) worked in an urban setting, 93 (22%) were based rurally and 129 (30%) worked between urban and rural areas. Half the respondents had over 10 years in practice. The majority of midwives who responded were aged between 40-59 years.

In 2009 the IOM revised their recommendations for ranges of weight gain in pregnancy to include a specific range of weight gain for obese women.

The main ethnic group was NZ European with minorities of Māori, British, Chinese, Indian, (other) European, and 'other'.

Table 1: Demographic data of participants

Demographic information		n (%)
Main area of work	Urban	201 (47.5)
	Rural	93 (22.0)
	Both	129 (30.5)
	Total	423 (100)
Number of years in practice	1-3	72 (16.9)
	4-5	40 (9.4)
	6-10	86 (20.2)
	>10	227 (53.4)
	Total	425 (100)
Age group	< 25 years	12 (2.8)
	25-29 years	17 (4.0)
	30-39 years	61 (14.4)
	40-49 years	157 (37.1)
	50-59 years	142 (33.6)
	> 60 years	34 (8.0)
Total	423 (100)	
Ethnicity	NZ European	319 (74.7)
	Māori	24 (5.6)
	Cook Island Māori	2 (0.5)
	Chinese	7 (1.6)
	Indian	3 (0.7)
	British/English	22 (5.2)
	European	8 (1.9)
	Other	42 (9.8)
	Total	427 (100)

ADVICE TO CLIENTS

Midwives were asked if they gave advice regarding nutrition and exercise in pregnancy (Table 2). There were 419 responses to this question. Nearly all the respondents discussed nutrition in pregnancy with their clients (97.6%). Seventy percent of these midwives would discuss protein,

carbohydrate, fruit and vegetable intake. Nearly half of respondents would discuss portion sizes. The majority of midwives (94.3%) gave advice around exercise in pregnancy.

Table 2: Question regarding advice given to clients

Question	Never	Usually not	Sometimes	Almost always	All the time	Response count
Do you discuss nutrition in pregnancy?	0	0	10 (2.4%)	114 (27.2%)	295 (70.4%)	419
If yes, do you discuss eating 5 servings of fruit & vegetables a day?	5 (1.2%)	22 (1.2%)	86 (20.5%)	135 (32.2%)	171 (40.8%)	419
Do you discuss protein & carbohydrate intake?	6 (1.4%)	26 (6.2%)	92 (22%)	136 (32.5%)	159 (37.9%)	419
Do you discuss portion sizes?	8 (1.9%)	72 (17.2%)	146 (34.8%)	93 (22.2%)	100 (23.9%)	419
Do you discuss exercise in pregnancy?	0	2 (0.5)	22 (5.3)	127 (30.3)	268 (64%)	419

Most respondents would recommend exercise to women when the BMI was above normal. (Table 3). Of the 358 responses to a question exploring frequency of exercise, 60% would recommend 30 minutes of exercise at least three times weekly, the remainder recommended exercise for 30 minutes daily. (data not shown)

Table 3: Exercise recommendation in pregnancy to the women with raised BMI

	Never	Usually not	Sometimes	Almost always	All the time	Response Count
BMI 25-29.9 (Overweight)	0	5 (1.2%)	22 (5.4%)	107 (26.0%)	277 (67.4%)	411
BMI 30-34.9 (Obese)	0	2 (0.5%)	19 (4.6%)	105 (25.5%)	285 (69.3%)	411
BMI 35-39.9 (Moderately obese)	0	6 (1.5%)	19 (4.6%)	102 (24.8%)	284 (69.1%)	411
BMI ≥ 40 (Morbidly obese)	2	8 (0.5%)	25 (1.9%)	101 (6.1%)	275 (24.6%)	411 (66.9%)

USUAL PRACTICE REGARDING HEIGHT AND WEIGHT MEASUREMENTS

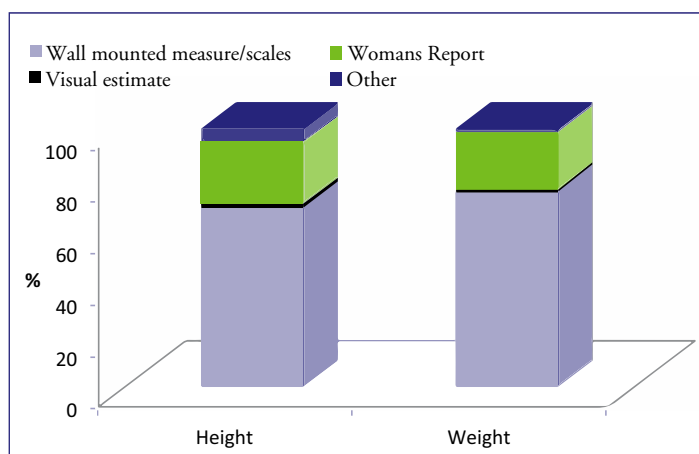
The midwives were asked about their usual practice regarding measurement of height and weight for their clients at registration (Table 4). Nearly 70% (286/415) of the midwives who responded reported calculating the BMI at registration all the time, with 12% (n=51) who would do so almost always. Nearly 10% (n=37) would never or usually not do this. More than half the respondents usually don't weigh or never weigh a woman at each antenatal visit.

Table 4: Usual practice regarding height and weight measurements

	Never	Usually not	Sometimes	Almost always	All the time	Response count
Do you establish a woman's height at registration?	0 (0.2%)	1 (0.2%)	1 (6.5%)	27 (93.0%)	388	417
Do you establish a woman's weight at registration?	0 (0.5%)	2 (0.7%)	3 (8.4%)	35 (90.4%)	377	417
Do you calculate BMI at registration?	8 (1.9%)	29 (7.0%)	41 (9.9%)	51 (12.3%)	286	415
Do you weigh at every antenatal visit?	84 (20.2%)	146 (35.1%)	70 (16.8%)	48 (11.5%)	68	416
Do you weigh at any other time?	86 (21.3%)	131 (32.4%)	160 (39.6%)	17 (4.2%)	10 (2.5%)	404

Midwives were asked how they established height with 69% (n=289) reporting they used a wall mounted measuring tape, 23.7% (n=99) using a woman's report of her height, and 1.4% (n=6) a visual estimate (Figure 2). For weight, 377 of 417 respondents (90.4%) established the weight of their client at booking all the time, using weighing scales in 314 of 417 responses (75.3%). A further 22.5% (n=94) used the woman's own estimate/report.

Figure 2: Chart showing how height/weight is established

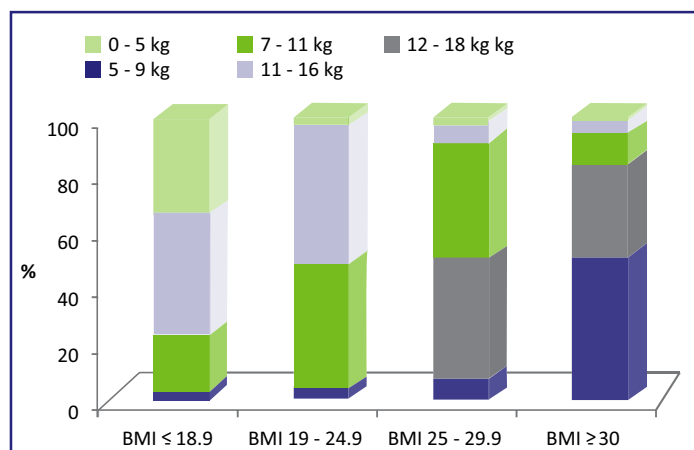


KNOWLEDGE REGARDING OPTIMAL WEIGHT GAIN DURING PREGNANCY

Respondents were asked if they knew of guidelines regarding weight gain in pregnancy. Of the 386 responses to this question, 53.4% (n=206) of respondents were aware of published guidelines for optimal weight gain in pregnancy for various BMI groups. 17.6% (n=68) were not aware of guidelines and the remaining 29% (n=112) were unsure.

Midwives were asked what they would recommend as a healthy weight gain in pregnancy for women of various BMI (Figure 3).

Figure 3: Healthy weight gain recommendation in pregnancy



For underweight women with BMI ≤18.9, the majority of midwives were recommending weight gain of 11-16 kg, or 12-18 kg during pregnancy (43% and 34% respectively). Women in the normal weight range were mostly asked to limit gestational weight gain to between 7-11 kg and 11-16 kg (44% and 49% respectively). Forty two percent (167 of 396) of midwives said they would recommend a weight gain of 5-9 kg for an overweight woman, and a similar proportion (41%) would recommend 7-11 kg weight gain for the same group. Half of the midwives who responded reported recommending weight gain of between 0-5 kg during pregnancy for obese women. A further 33% (131 of 397) would recommend between 5-9 kg weight gain for the same group.

Customising care to meet the needs of the individual woman

There was a large volume of free text data responses in the survey as the midwives sought to explain their answers and how they worked with women. The first of two themes identified 'customising care' and highlighted how midwives individualised care and advice depending on the woman's context.

The majority of midwives who responded to the survey reported that they established a BMI and that they would alter their usual pregnancy care discussions based on the woman's BMI. If the woman was overweight or obese then the midwives indicated they would prioritise this discussion.

"This depends on what the woman is already doing - you would ascertain that first"

"Depends on what the woman is already doing in the way of exercise. Tend to discuss this more with women who are overweight."

"I would weigh a woman if weight was a risk factor, if there were lifestyle issues, if she reported concerns or an increase in weight outside of guideline averages, if there were other issues that could affect weight, and then I may weigh monthly or per term and consider other weights based on my findings and how the clinical picture would vary. If a woman had a high BMI then weight would be discussed and monitored, certainly each trimester and particularly in the third."

The majority of midwives who responded to the survey reported that they established a BMI and that they would alter their pregnancy care discussions based on the woman's BMI.

The midwives discussed the difficulties for women of making major life style changes when easier options regarding nutrition were not available.

The midwives reported finding out what the woman is already doing (with regards to exercise and nutrition) and then providing advice to support the woman's context.

"Exercise to your previous level of fitness and reduce the strength and intensity accordingly as the pregnancy progresses. Avoid excessive exercise that super heats the body and unduly raises cardiac output."

"I encourage them to continue with current exercise and add/subtract according to body comfort/gestation."

"If the response to this seems unenthusiastic I discuss what they would be able to do and try to develop something that WILL work for the individual."

The midwives also reported how they individualised their responses during pregnancy when a woman already had a high BMI.

"Looking at her diet together, discussing changes. Referring to a dietician (difficult). Ensuring her awareness of increased risk. Discussing ways she might exercise better."

"Discuss with women risks of high BMI and importance of diet/exercise; review eating, exercise each visit; refer to dietician."

One midwife discussed the need to empower the woman to reduce feelings of intimidation and support her to make changes.

"Women need coaching about their health and clinical observation and counselling in a way that empowers the woman to take charge of her health without her feeling intimidated."

The theme of customising care to the individual needs emerged from a variety of question responses and with midwives explaining the need to consider the full picture for the woman and then customising their discussions and care management.

A second theme that was identified from the free text responses was the acknowledgement that obesity is a public health issue that affects the whole of society and needs a full public health response if changes are to be made and obesity reduced.

Obesity is a wider societal issue

Midwives commented that tackling obesity needed government support, legislative changes, changes to advertising of high sugar foods and reductions in the costs of healthy food.

"The society we live in makes 'change' difficult. Food and exercise advice is not enough!!!! Motivation is needed."

"Also there needs to be responsibility taken by the government and the food industry around food advertising and cost of essential food items."

"It is all very well to promote healthy choices but when a family is on the poverty line buying cheap bread, fizzy and not so much fruit and vegetables is the reality. Also we need to focus on the health of our children by being staunchly behind exclusive breastfeeding as the first step in life to combating some of these issues such as obesity and diabetes."

The midwives discussed the difficulties for women of making major life style changes when easier options regarding nutrition were not available.

"Lifestyles are hard to change when it becomes the normal lifestyle for families plagued by decreased physical inactivity and poor diet. Creating better health outcomes by focusing on improving healthier lifestyles is a much larger and complex challenge that needs midwives to have the ability to be able to refer to dietitians/nutritionists - and for women to be able to easily access them within their community."

Midwives in this study said that whilst they considered themselves part of the solution they also called for more resources. Comments reflected concerns that obesity was more common amongst women who were in lower socio-economic groups and who had fewer resources to ensure healthy nutrition.

"There is a huge problem with obesity in our society. It has become 'normal' to be overweight. Most of my clients will fall in to the overweight range, about 5 a year would be classed as obese and 1-2 a year would be considered morbidly obese - it is incredibly difficult to get help/support for the women in the community who want/need it unless/until they have other medical problems. We should be looking at early intervention to prevent the problems rather than treating once they occur (if possible)."

"Very difficult to help women with obesity when financial/social circumstances do not allow them to access support and/or healthy diet. For women who have multiple issues (e.g. low socio-economic, smoke, family violence, transport issues, late booking/non-attenders, etc.) sometimes obesity is the least of your worries. Also find it frustrating that there is no practical help for women who do wish to lose weight and as an LMC there is only so much time you have for the increasing number of issues we are supposed to counsel women about!"

These comments have provided valuable insight from the midwifery perspective of how the issues related to lack of finances and other resources can create barriers to lifestyle change as well as access to support and care provision.

DISCUSSION

This nationwide cohort study is the first of its kind in New Zealand and provides an important insight into the information and practice of LMC midwives when discussing nutrition, activity and weight gain during pregnancy. The vast majority of midwives who responded are providing information on nutrition and exercise during pregnancy and are measuring the height and weight of women in order to determine a body mass index. Based on this, midwives are providing individualised advice that acknowledges the context of the woman's life and discusses ways of ensuring optimal weight gain.

In a qualitative study by Weir et al., (2010), overweight and obese women often viewed healthy eating as being of greater importance for the health of mother and baby than participation in physical exercise. Some pregnant women even perceive physical activity to be unsafe with risks to the baby (Clarke & Gross, 2004). In contrast, our study respondents are giving advice regarding nutrition and exercise in pregnancy, and this is being tailored to the individual woman.

The theme of customising care to the individual woman and her circumstances echoes through the free text data in the responses. This reflects the midwifery model of partnership practised in New Zealand where continuity of care creates a unique relationship between the midwife and the woman, allowing for a relationship of trust to be built. This relationship also provides insight for the midwife into the woman's circumstances so that care can be individualised to the woman's needs.

Nearly half of the LMCs who responded to this survey were unaware of guidelines for gestational weight gain, with respondents generally

The theme of customising care to the individual woman and her circumstances echoes through the free text data in the responses

recommending lower weight gain targets than the updated IOM (2009) published guidelines (IOM, 2009; RANZCOG, 2013). This is in contrast to other studies which have found that providers tend to recommend increased weight gain compared to known guidelines (Herring et al., 2010). There is evidence that low gestational weight gain can increase the risk of small for gestational age infants (IOM, 2009).

Our study is limited by the low response rate obtained and selection bias inherent to surveys. Those with an interest in this topic were more likely to participate in the study. The results are therefore not necessarily representative of the total population surveyed; however the demographics are representative of the total population (MCNZ, 2012). Only midwives who were members of the College of Midwives were approached as this was the best way to access contact details and email addresses confidentially. Therefore midwives who were not members of the College and those whose email addresses were invalid were not invited to participate in the study. This survey targeted midwife LMCs only, and did not include other LMC providers such as general practitioners or private obstetricians.

In their responses, midwives called for more resources and support for overweight and obese women to help them enhance nutrition and activity as a means of improving outcomes for these women. Weight gain and obesity in pregnancy are part of a wider societal issue and a public health concern. The increasing trend to obesity requires a broader approach to support change which may include government legislative changes, limitations on advertising and reducing the costs of healthy food.

CONCLUSION

In conclusion, this study has provided a snapshot of current midwifery practice and how midwife LMCs provide advice about nutrition, activity and weight gain during pregnancy. The majority of midwives who participated in the study are currently measuring BMI and providing individualized advice around exercise, nutrition and weight gain to women during pregnancy; this advice is often tailored to the individual woman's needs and circumstances. However, the issue of obesity was considered to be part of a wider societal problem which will require a broader response and increased resources to support sustained change.

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