



A REPORT BY THE ALL-PARTY PARLIAMENTARY GROUP
ON A FIT AND HEALTHY CHILDHOOD

MATERNAL OBESITY

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We thank Slimming World for the financial support that made this Report possible and wish to make it clear that Slimming World neither requested nor received approval of its contents.

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The Working Group that produced this Report is a sub-group of the All Party Parliamentary Group on a Fit and Healthy Childhood.

The purpose of the APPG is to promote evidence-based discussion and produce reports on all aspects of childhood health and wellbeing including obesity; to inform policy decisions and public debate relating to childhood; and to enable communications between interested parties and relevant parliamentarians. Group details are recorded on the Parliamentary website at:

<http://www.publications.parliament.uk/pa/cm/cmallparty/register/fit-and-healthy-childhood.htm>

The Working Group is chaired by Helen Clark, a member of the APPG Secretariat. Working Group members are volunteers from the APPG membership with an interest in this subject area. Those that have contributed to the work of the Working Group are listed on the previous page.

The Report is divided into themed subject chapters with recommendations that we hope will influence active Government policy.

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SUMMARY OF RECOMMENDATIONS

There are many recommendations flowing from this Report. This is a reflection of the work required to recognise optimum outcomes. The recommendations also appear at the end of each relevant section.

1. Recommendations - PLANNING FOR PREGNANCY – THE ANTENATAL EXPERIENCE/ADVICE GIVEN TO BOTH PROSPECTIVE PARENTS, WHAT IS AVAILABLE TODAY AND WHAT MORE NEEDS TO BE DONE?

- 1.1 Advice given to adults of child bearing age should be offered to both males and females about healthy lifestyles to include details about the impact their current weight can have upon the health of their future children
- 1.2 The above public health information should form part of the National Curriculum and be delivered in schools
- 1.3 The UK should review the suitability of the IOM weight guidelines, BMI and other (such as waist to hip) methods of weight measurement and devise uniform UK guidelines
- 1.4 Women seeking advice about planning a pregnancy should receive personalised weight gain advice and the first (and all subsequent) antenatal appointment(s) should include measurement of weight
- 1.5 A government campaign should be instigated to raise awareness of the links between overweight/obese parents and infertility, offspring obesity and offspring chronic disease
- 1.6 The advice to stop smoking in pregnancy should be widened to raise awareness of the benefits of healthy lifestyles including a healthy diet, eliminating alcohol and regular physical activity
- 1.7 Increase in frontline staff; there is a significant shortfall in the numbers of midwives and health visitors currently working in the UK
- 1.8 Advice on healthy lifestyle and good nutrition to be embedded in the content of antenatal visits
- 1.9 Advice about formula feeding and the safe preparation of formula food to be a full part of the antenatal experience. Whilst still stressing the optimum benefits of breastfeeding it is important that women are not made to feel bad mothers/failures if they bottle feed
- 1.10 More funding and government support for the entire range of maternity services. Lack of time and resource encourages a deleterious tick box culture that discourages the building of parental confidence and meaningful relationships with Healthcare professionals.

2. Recommendations - THE ROLE OF MIDWIVES, HEALTH PROFESSIONALS AND HEALTH VISITORS AT BOTH ANTENATAL AND POSTNATAL STAGES WITH REGARD TO THEIR OWN TRAINING NEEDS SO THAT THEY ARE PROPERLY EQUIPPED TO OFFER ADVICE THAT IS UP TO DATE AND PERSONALISED

- 2.1 Development of clear UK guidance on appropriate weight gain during pregnancy
- 2.2 Routine weighing of pregnant women to be mandatory, regardless of their starting BMI. Currently only obese women are weighed; thus creating stigma. If all women were weighed routinely, weight monitoring would be normalised with an opportunity for the HCP to offer appropriate interventions for those gaining excessive (or inadequate) weight
- 2.3 Routine diagnostic antenatal checks for gestational diabetes
- 2.4 Quality and Outcomes Framework Indicators (QOF) to include Maternal Obesity; GP incentives for preconception counselling services to be widened to include obesity
- 2.5 Public health awareness campaigns, communicating important diet and lifestyle choices: dispelling myths such as 'eating for two'
- 2.6 Training in nutrition (including breastfeeding) for healthcare professionals and early years practitioners working with women and families before, during and after pregnancy. This should also address the ongoing lack of confidence and embarrassment of the Healthcare Professional when faced with raising 'body weight' issues with pregnant women
- 2.7 Stakeholder partnership to improve understanding and awareness of dietary and lifestyle advice: highlighting what women planning pregnancy or pregnant can eat/should eat rather than lists of foods to avoid
- 2.8 More time to be allocated for healthcare professionals to have contact with prospective and new parents; discouragement of the 'tick box' culture that impedes the establishment of personal relationships
- 2.9 Government to collect and disseminate regular data on the prevalence of maternal obesity and to fund research into the long-term effects of nutritional and lifestyle interventions before conception
- 2.10 Government to collate and disseminate data on the financial cost of maternal obesity in the UK to inform resource-based decision-making about services and training
- 2.11 Complete review and redesign of training for healthcare professionals from university/college courses onwards including regular updating as part of continual professional development (CPD) and use of apps/and online modules
- 2.12 Mandatory training of medical students and practising doctors in

evidence-based lifestyle interventions on the prevention and treatment of chronic disease

- 2.13 Issue guidance for midwives about how to advise women on weight management in pregnancy via a national standard for the training of midwives to help them effectively engage and sensitively raise the issues of overweight and obesity; making them familiar with options for signposting and providing an understanding of the emotional, physical and mental difficulties that women suffering from overweight may experience, thus instilling the need for a caring and compassionate approach.

3. Recommendations - MATERNAL WEIGHT BEFORE, DURING AND AFTER PREGNANCY

- 3.1 A holistic, integrated national approach to nutritional and healthy lifestyle advice to target all adolescents both at school and in the community
- 3.2 Production and dissemination of UK evidence-based guidelines on weight management during pregnancy including ethnic-specific measures of BMI and obesity
- 3.3 Dietary assessment, advice and body weight measurement to be a mandatory component of the first midwifery visit with regular follow-up reviews through the planned visit cycle
- 3.4 Greater emphasis on the role of primary pre-conception clinics with guidance to both partners planning a pregnancy on nutrition, lifestyle and ideal pre-pregnancy BMI
- 3.5 Provision of improved education, training and resources for healthcare professionals, including instruction on how to best communicate messages about healthy nutrition and lifestyle to women planning to conceive or who are pregnant and guidance on ethnic and culturally specific advice
- 3.6 Government funded research into the long-term effects of nutritional and lifestyle interventions before conception and in-between pregnancies
- 3.7 An integrated approach to improve the pre-conception health of the population, including pregnancy prevention and planning and preparation; reaching beyond the primary healthcare sector and adopting a cross government department ecological approach to risk reduction that addresses personal, societal and cultural influences
- 3.8 Development and dissemination of national scalable interventions which support both overweight/obese pregnant women and pregnant women with a healthy starting BMI, to prevent excessive gestational weight gain and encourage healthy lifestyles

- 3.9 To break the vicious circle of obesity begetting obesity, there is an urgent need for evidence-based research to assess whether interventions in high-risk pregnant women which typically aim to reduce weight or improve glycaemia, can reduce the risk of adverse outcomes in offspring
- 3.10 Promotion of physical activity opportunities by means of subsidised classes for new and expectant mothers and subsidised childcare in gyms and swimming pools where the child is changed and brought to the mother at a set time for a joint swim
- 3.11 National recruitment drive to increase the numbers of midwives and health visitors
- 3.12 Continuing advice to the mother on lifestyle and weight monitoring to be part of the healthcare professional's post pregnancy care to ensure that after breastfeeding is discontinued a healthy BMI is regained or worked towards
- 3.13 Healthcare professionals to offer advice to ensure that a mother's mental health needs are addressed; this to include guidance about how a routine of eating well can promote positive mental health
- 3.14 Consideration of making some parts of the 2017 update of the maternal weight management NICE guidance mandatory.

4. Recommendations - THE ROLE OF SOCIOECONOMIC CIRCUMSTANCES IN RELATION TO MATERNAL OBESITY

- 4.1 A co-ordinated 'whole system' approach to tackling health inequalities with initiatives across departmental boundaries to be assessed to ensure that they do not widen the health gap between socioeconomic groups
- 4.2 Measures to ensure that the level of a minimum/living wage keeps pace with the cost of living via regular review
- 4.3 Increasing the availability of healthy foods in all neighbourhoods and reducing the price
- 4.4 Promote healthy eating and physical activity through comprehensive pre-school and school policies that preferentially include children from low socioeconomic families and actively encourage girls to be physically active
- 4.5 'Life skills' to be embedded in the National Curriculum at all stages of a child's education
- 4.6 Healthcare professionals to promote exclusive breastfeeding until complementary feeding begins at about 4 - 6 months of age and to give ongoing advice in person to parents about introducing a wide variety of healthy foods including meat for iron and fresh fruit and vegetables to support taste development
- 4.7 Offer counselling for dietary change and increased physical activity in

- primary health care
- 4.8 Promote physical activity in workplaces via urban planning and support active transport with a focus on increased walking and cycling
- 4.9 Restrict the marketing of food products high in fat, sugar and salt and beverages with high sugar content to children
- 4.10 Reduce total fat content by eliminating trans-fats from processed foods
- 4.11 Regulate food labelling to facilitate consumer knowledge and encourage increased reformulation of processed foods.

5. Recommendations - ETHNIC/CULTURAL ISSUES AS CONTRIBUTORS TO MATERNAL OBESITY AND COMBATING IT

- 5.1 Government-funded research into overweight and obesity in minority ethnic groups and compilation and dissemination of standardised and accessible data
- 5.2 Specific training and regularly updated continual professional development for medical practitioners and healthcare professionals in issues affecting women from minority ethnic groups in pregnancy
- 5.3 Funding to be released for creating a 'pregnancy equality' climate for ethnic groups, including readily available translation and interpretation at all centres delivering maternity services and properly equipping those healthcare professionals who make home visits with appropriately targeted materials
- 5.4 Healthy lifestyle modules in schools to contain clear information appropriate to all ethnic groupings
- 5.5 Further research into appropriate weight measurement method for minority ethnic groups before, during and after a pregnancy.

6. Recommendations - THE ROLE OF ADVERTISING, TRADITIONAL MEDIA AND SOCIAL MEDIA IN PROVIDING POSITIVE MESSAGING FOR WOMEN IN RELATION TO THEIR WEIGHT; ALSO CONSIDERING NEGATIVE MESSAGING, FAT SHAMING ETC.

- 6.1 More research into the effects and influence of all media upon the pregnant woman as part of the public health agenda
- 6.2 An embracement of diversity and avoidance of stereotypes; descriptions and portrayals of overweight pregnant women should not imply negative assumptions about their character, intelligence, abilities and lifestyle habits
- 6.3 The use of appropriate language and terminology, avoiding potentially pejorative adjectives or adverbs when describing obese/overweight pregnant women should be endorsed in all media and particularly social media and Twitter

- 6.4 Coverage of obesity to be balanced and accurate with a requirement for the media to be fair and accurate in reporting issues relating to body weight gain. News stories and articles on maternal obesity should be grounded in scientific findings and evidence-based research with all funding sources cited
- 6.5 Less concentration upon individual 'responsibility' as this may encourage societal, biological and environmental contributors to obesity in pregnancy to be neglected
- 6.6 Appropriate pictures and images of individuals affected by obesity should be used that do not contribute to the depersonalisation and stigmatisation of the individual with maternal obesity
- 6.7 Positive media portrayals of obese pregnant women need to be employed instead of using such images merely for the purpose of humour and ridicule
- 6.8 A more constructive use of pregnant celebrities by social and traditional media with a concentration upon healthy pregnancy lifestyle rather than the race to get back into skinny jeans after the birth
- 6.9 Government evidence-based research and medical practitioner advice to be presented on social media in an accessible and informative manner; thereby lessening the influence of the self proclaimed 'expert' but unqualified lay person.

7. Recommendations - NATIONAL AND INTERNATIONAL BEST PRACTICE; WHAT LESSONS ARE TO BE LEARNED?

- 7.1 Reputable international body such as The World Health Organisation (WHO) to collate best practice in the care of pre-pregnant, pregnant and post partum women with the aim of establishing a 'Maternal Charter' similar to the UN Convention on the Rights of the Child
- 7.2 National governments to be encouraged to record data about maternal obesity so that the extent of the problem can be dealt with and progress ascertained in achieving 'healthy outcome' goals.

8. Recommendation - MATERNAL OBESITY PRACTICE IN THE DEVOLVED UK COUNTRIES

- 8.1 UK Government to conduct a comparative study of pre-pregnancy, pregnancy and post pregnancy practice, advice and provision in all the devolved UK countries with the aim of producing standardised programmes that offer an inclusive service for all women and children regardless of their family, demographic and socioeconomic circumstances.

9. Recommendations - BORN IN BRADFORD AND OTHER STUDIES RELATING TO ETHNICALLY DIVERSE GROUPS

- 9.1 Government to expand the research base for weight management in the pre-pregnancy, pregnancy and postnatal periods, identify the gaps and contribute to funding streams either independently or in support of relevant academic/charitable organisations
- 9.2 Benign research findings to be used to underpin Government advice on the conduct of maternity services for those caring in a professional capacity for pregnant women and their families.

A REPORT BY THE ALL PARTY PARLIAMENTARY GROUP ON A FIT AND HEALTHY CHILDHOOD

MATERNAL OBESITY

On 21st March 2017, the Health Select Committee published its seventh Report of the Session 2016 – 2017 and included the following observation:

'We welcome the measures the Government has included in the childhood obesity plan, but are extremely disappointed that several key areas for action that could have made the strategy more effective were removed. Vague statements about looking 'to further levers' if the current plan does not work are not adequate to the seriousness and urgency of this major public health challenge. We call on the Government to set clear goals for reducing overall levels of childhood obesity as well as goals for reducing the unacceptable and widening levels of inequality''
(Seventh Report of Session 2016-17 HC 928).

The All Party Parliamentary Group on a Fit and Healthy Childhood certainly agrees with that sentiment but we would start earlier. By the time a child is born, it may have already been set upon a virtuous path to health and wellbeing – or a track that will lead to childhood and thence adult obesity with all its attendant ills. Serious attention must be paid to preparation for pregnancy and pregnancy itself and that is what we address here.

Being pregnant comes with a lot of baggage; not least a plethora of clichés. Mums-to-be are expected to 'blossom' and 'bloom', dress to show off their 'bump' and take it all in their stride. After all, they are simply 'doing what comes naturally' aren't they? Above all, they will surely take comfort from the unending stream of pregnant celebrity 'role models', paraded in newspapers, magazines and social media at every stage of the nine months – and then safely zipped into their skinny jeans days after giving birth.

Except that it's not like that.

Being pregnant in the 21st century can be a perplexing, isolating and even frightening experience for women who can feel thoroughly unprepared for it all - whether or not theirs is a planned pregnancy. With mixed and even directly contradictory messages assailing them from all sides, an absence of consistent practice and advice from healthcare professionals, plus outdated homilies about the desirability of 'eating for two' from older family members, expectant mums can feel uncertain about what to do for the best. 'Doing what comes naturally' might not seem natural at all.

The issue of weight gain in pregnancy has become subject to scrutiny and debate and articles about it are increasingly to be found in mainstream media. In *'The Mail Online'* (13th October 2016) readers are informed of the dangers lying in wait for both a parent and her child if the expectant mother is obese. In addition to an increased likelihood that the child of a woman who has been obese in pregnancy will struggle with excess weight themselves *'babies are being put at risk of brain damage, stroke, heart attack or asthma in adulthood.....There is now a wealth of evidence the risk of obesity and its associated conditions such as heart disease, diabetes and some cancers could impact the developing baby. In turn, when the child becomes a young adult they may pass the risk of obesity on to their children.'*

Professor Mark Hanson from Southampton University is subsequently quoted urging a co-ordinated *'top down and bottom up'* approach to pregnancy management that enables future parents to avoid overweight and obesity by leading healthier lives.

The messaging here about weight in pregnancy is that *'eating for two'* is beneficial to neither mother nor baby, but a mere three months later, *'The Daily Mail'* (18th January) carried an article with a different perspective. This time the reader is informed about the existence of new findings from a study led by Aberdeen University and printed in the reputable BMJ's *'Heart'* publication.

Without a trace of irony, the news headline states that:

'Eating for two won't harm a child long term'

and then continues:

'Experts examined data from 3,781 women who gave birth in Scotland between 1950 and 1956, and then analysed the health record of their children until 2011. They found mothers' weight gain during pregnancy had little impact on their offspring's chance of having a heart attack or stroke or dying before their 60s.'

The particular newspaper itself has shown a responsible approach towards informing its readers of the dangers of overweight and obesity so the answer is not to respond with calls to *'shoot the messenger'*. However, the message itself, presented by two respected but diametrically opposed research studies, is at the very least confused, and in the absence of clear government guidelines does little to assist the pregnant woman in making the best and most nutritious choices for herself, her unborn baby and subsequently her newborn and developing child.

Social media also adds to the lack of clarity surrounding weight in pregnancy. In the final decades of the 20th century, Sarah Ferguson, Duchess of York attracted

media opprobrium over her fluctuating shape, and excessive weight gain during her first pregnancy earned her the soubriquet 'The Duchess of Pork'. Yet recently, Blac Chyna, fiancée of celebrity Rob Kardashian took to 'Snapchat' to announce a definitive ambition to pile on the pounds in pregnancy from a slender pre-pregnancy weight of 135lbs:

'Like, no lie, my goal is to gain 100lbs this pregnancy,' she said in a Snapchat video in June, 'I'm tear it up, and then I'm snap back.'

In plain language, this might be defined as a determination to gorge without restraint in pregnancy (the 'lots of everything you fancy does you good' approach) and then to embark upon an equally ruthless and radical diet immediately after delivery:

'My goal weight after the baby will be 130lbs.'

In 2013, the internet buzzed frantically when pictures of the Duchess of Cambridge (who has been described in Health debates as '*a wonderful role model*' *HL Deb 17th Dec 2012 Vol 741 Col 1451*) were published in all national media as she left St Mary's Paddington Hospital with her new baby, Prince George and husband Prince William:

'Criticism of the Duchess of Cambridge's post-baby bump is sparking a global discussion about the need for greater understanding of what happens to women's bodies during pregnancy.' (@KatrinaAClarke, July 25th 2013)

The former Kate Middleton found herself in the eye of a media storm as '*Before the new mother even left hospital, UK's OK! Magazine ran a cover story about how she intends to lose the extra weight while members of the Twitterverse were shocked she still looked pregnant.*'

Reaction ranged from praise and surprise to '*unkind*' fat-shaming:

'Some asked on Twitter if it was 'normal' to still look pregnant after giving birth, while others wondered why she was still "fat".'

The furore was remarkable considering that invasions of the privacy of the Duchess had formed a substantive element of the Leveson Inquiry whose findings had been published the previous year (*'Inquiry into the culture, practices and ethics of the press' 2012 HC 780-11*).

This type of outpouring may be typified as the product of a 'celebrity culture' in which new mums enter a type of purdah until they are ready to emerge with a pre-

pregnancy toned and groomed body. Following a public outcry, led by TV presenter, Katy Hill who tweeted '*I think all mums should boycott @OK_Magazine for this cover,*' (@KatyHill 23 July 2013) OK felt obliged to make an apology of a sort, stating '*We would not dream of being critical of her appearance. If that was misunderstood on our cover it was not intended*' (BBC 24th July 2014).

As can be expected, the Duchess of Cambridge made no response to the intrusive public commentary on her post-pregnancy shape, but her own feelings may be gauged by the fact that after the birth of her second child, she disappeared from view until she could appear, trim, toned and resplendent inskinny jeans.

Therefore the issue of weight in pregnancy is nothing if not complex and confusing for the pregnant woman. Should she eat for two or if already overweight/obese even embark upon a diet? Should she take a gradual approach to weight loss after she has given birth or, like Blac Chyna, adopt a radical and immediate extreme diet to lose the pounds, keeping herself largely in purdah until she has achieved her goal? Should she rely on older family members for weight management advice, healthcare professionals, articles in social and traditional media or research findings? Or all of these? Is there or isn't there any advice from the Government and what path should she take if the information is all contradictory? And after the birth, what next?

A case study of one woman's experience during her pregnancies (published in the September 2014 edition of the Canadian magazine '*Today's Parent*') is illustrative of some of the issues surrounding weight gain in pregnancy that appertain wherever a woman may live in the world of today.

Ottawa accountant and half-marathon runner, Susan Clinton, had always prided herself on her healthy and active lifestyle, only to be derailed by a pregnancy plagued by constant sickness and a consequent craving for comfort foods. A diet majoring in carbohydrates and 'treats' like ice cream produced a child weighing in at 10lbs (the dangers for mother and child attendant upon giving birth to an overly large baby will be discussed in the body of the Report proper) and an overall weight gain for Clinton of 85lbs. Her situation was akin to that of a drowning swimmer without a lifebelt – because she had little or no access to sensitive, respectful and informative advice:

'Adding to Clinton's misery was her sense of powerlessness – she wasn't sure what she could have done differently while pregnant to manage her weight gain. "If someone had told me how many calories I should consume in a day, I would have done it," she says. Clinton says her doctor seemed to take comfort in the fact that she gained a lot of weight and didn't seem worried. When she looked online for

advice, she found herself lost in a whirl of inconsistent information. Ultimately, she gave into her body's cravings.'

When Susan Clinton's son was just over a year old, she became pregnant again, having successfully shed all her former pregnancy weight via a combination of physical activity and regular classes run by one of Canada's weight management organisations. She was determined that gorging on comfort food was not going to define her pregnancy this time. Her self esteem had suffered badly from her first pregnancy weight gain and as is characteristic of many women in her situation, Susan Clinton blamed herself.

It was to prove a self-fulfilling prophecy. Susan Clinton's second baby was even larger than her first at 12lbs and at the end of the nine months she had gained 72 pounds.

This first-hand account of pregnancies that were certainly not 'feel good' experiences is illustrative of malign issues that must be addressed if we are to improve matters for mother and baby in a way that will benefit them both during the life course. They may be summarised as:

- The lack of availability of clear medical guidelines for healthy weight gain in pregnancy. The American Institute of Medicine guidelines are used internationally but there is no UK equivalent
- Confused/contradictory messages from other sources including online, media, research studies and family/friends about healthy weight gain
- Reluctance on the part of medical practitioners to raise the issue of undue pregnancy weight gain or existing obesity at the start of a pregnancy although this rarely applies in the case of advising women who are originally underweight or become so during the nine months
- Lack of confidence on behalf of doctors/healthcare professionals about how to raise the issue of excess weight in a way that is sensitive and respectful
- Lack of knowledge on behalf of doctors/healthcare professionals about guidelines (such as those produced by the IOM) that are available
- General lack of knowledge about the medical dangers facing both the pregnant woman and her child during the life course of excess maternal weight in pregnancy (and thereafter)
- Isolation experienced by women because of some or all of the issues above during pregnancy leading to feelings of guilt/low self esteem and possibly the development of mental/emotional problems as a consequence.

This Report on Maternal Obesity by the All Party Parliamentary Group on a Fit and Healthy Childhood will examine these issues and others as we aim to convince

policy-makers that devising ways in which to ensure that a mother's weight management in pregnancy and thereafter is healthy and undertaken by the individual with confidence is not optional but essential.

The Government's Child Obesity Strategy (published in July 2016) made no mention of the effects of maternal obesity – either in pregnancy or subsequently. Now would be an apt time to revise it – with this important inclusion.

1. PLANNING FOR PREGNANCY – THE ANTENATAL EXPERIENCE/ADVICE GIVEN TO BOTH PROSPECTIVE PARENTS, WHAT IS AVAILABLE TODAY AND WHAT MORE NEEDS TO BE DONE?

Achieving beneficial lifestyle change is difficult to achieve, but prospective parenthood is a window of opportunity to ensure that the appropriate advice, conveyed with sensitivity and respect, will not fall upon deaf ears. Research shows that couples who are planning a pregnancy, who have embarked upon the antenatal journey, or who are discovering life as new parents are likelier to seek, take and act upon healthy lifestyle advice than at any other period. (*Stephenson J. et al. 2014 'How do women prepare for pregnancy? Preconception experiences of women attending antenatal services and views of health professionals'. PloS one, 9(7), p.e103085*).

The earlier that support is given, the better the outcomes will be (*Stephenson et al. 2014*) and the time span between preconception and the early postnatal years is crucial in the fight against maternal obesity and its attendant effects upon the extended family unit. What is required is for new and prospective parents to access the best, evidence-based guidance on the ideal pre-pregnancy BMI (body mass index) for the individual woman, information about what her personal appropriate gestational weight gain should be and effective, ongoing support to act upon on this advice.

We are falling far short of such an ideal.

Discussions about health with prospective parents are best initiated before conception and the Healthcare Professional (usually a nurse or GP) would be the first point of contact. Currently this conversation would occur only when reviewing contraception options and if the couple is aiming to start a pregnancy. GPs are now encouraged to raise the topic of being overweight with a patient during routine appointments aside of pregnancy, but there are no guarantees that they will. If they take the opportunity and introduce the negative impact that overweight or obesity can have upon fertility and the future health of children,

individuals may be encouraged to adopt healthier lifestyles before they have considered conceiving.

At present, however, the conversation is largely unstructured and will concern 'recommendations' (no uniformity) for a healthy pregnancy. It will be directed at the female partner and typically include advice to stop smoking, reduce/cease alcohol consumption, take folic acid and maintain a 'healthy' weight. Largely, recommendations made by healthcare professionals revolve around the optimum conditions for conception rather than pre-conditions for a healthy pregnancy and thence a healthy baby and child. The quality of the advice is mixed. A woman may be informed about the strong correlation between gestational diabetes and obesity in females and the corresponding link between gestational diabetes and the baby being born overweight and becoming an obese child - or she may not. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2866595/>

She will be told that smoking cessation during pregnancy is essential for a number of reasons – but the list will not necessarily include the connection with a healthy weight during childhood. At present, most people are aware that smoking is detrimental to maternal health and that of the unborn foetus – but the long term link between smoking and childhood metabolic imbalance remains firmly under the radar. However, an association has been found between expectant mothers and leptin levels in their babies. The leptin hormone is part of the system that controls appetite and sends signals that a person has eaten enough; an imbalance within this system can affect a child's ability to control their appetite naturally. <https://www.ncbi.nlm.nih.gov/pubmed/16521946>

On her first encounter with the midwife, a woman will receive a national resource leaflet called '*Body Mass Index in Pregnancy Information Leaflet*'. This gives information about the complications that obesity can have upon pregnancy and birth and observes that '*Long term your child can develop problems with obesity.*' However, it fails to explain why and neither does it signpost the woman to any further research or guidance. Research conducted by the Infant and Toddler Forum (ITF) has shown that whilst most new mothers are satisfied with the general support they receive from healthcare professionals, there is a pressing need for more information on both nutrition and gestational weight gain during pregnancy (*Infant and Toddler Forum, 2014. 'Early nutrition for Later Health: Time to Act Earlier'*). It is never too early to begin providing prospective parents with nutritional advice, but it should be centred upon comprehensive, current information that remains impartial. The advice should also enable parents to make a properly informed choice on how best to feed and look after their child once it is born.

Something of serious import is that there must be a continuity of accessible advice which can be sought by prospective parents in a meaningful and engaging way. It has been noted by the Department of Health that:

'New mothers and fathers are information hungry, but they want to feel able to access information when needed, rather than having it 'dumped' on them' (D H Preparation for Birth and Beyond, 2011).

During pregnancy Infant and Toddler Forum research as above (ITF 2014) found that currently, only around 50% of pregnant women make successful healthy dietary change. As in the Canadian case of Susan Clinton, this is not because pregnant women are reckless and irresponsible as a category. The ITF's study involving 1,000 mums and expectant mums revealed that more than a quarter were worried about their weight and/or nutrition during pregnancy. Three quarters of young pregnant women (18-24 years) wanted more support and confusion abounded about how much weight to gain during pregnancy (ITF 2014). A shocking 68% of women received no advice on weight gain before, during or after pregnancy and almost 50% revealed that their midwife or GP did not weigh or measure them to assess body mass index (BMI) (ITF2014). Research also showed that only four in ten healthcare professionals always provide advice on nutrition and exercise to pregnant women. Only 10% of healthcare professions always provide weight management advice during a pregnancy and over a quarter never do so.

A picture is emerging of consternation surrounding the continuity of maternity care; a longstanding policy area for successive governments, initially identified by Baroness Cumberlege (DH, *Changing Childbirth: Report of the Expert Maternity Group, 1993*) and a satisfactory resolution to the problem seems as remote now as it was then. Worryingly, there is much uncertainty as to how government regards continuity of care in terms of priority. It has been noted that:

'Some of the Department's main objectives for maternity services, such as continuity of care for women by midwives are described only as aspirations not objectives' (Committee of Public Accounts, 'Maternity services in England' Fortieth Report of Session 2013-14 HC 776). Yet the reasons for the unsatisfactory experience of pregnant woman are complex and cannot be dismissed as a lack of healthcare professional interest; on the contrary, the IFT research found that over 70% understood the importance of nutritional advice during a pregnancy. Reasons for the poor provision of nutritional guidance and support during a pregnancy include:

- Inadequate training for healthcare professionals: explored further in Chapter Two
- Variable provision of resources to support expectant and new mothers (*UNICEF 2001*)
- Absence of UK guidelines on appropriate gestational weight gain. Some United Kingdom Healthcare professionals use the United States Institute of Medicine guidelines (2009) but they remain unendorsed by NICE alongside other guidance
- Lack of confidence: 23% of healthcare professionals (*ITF 2014*) lack confidence in their own knowledge of nutrition for preconception and the area where confidence plummets is obesity in pregnancy
- Embarrassment: many healthcare professionals are reluctant to address weight gain and current overweight with parents that they have only just met
- Shortfall in the number of midwives and health visitors currently working in the UK
- Fragmented preconception care: GPs receive financial incentives for advising women presenting with conditions such as epilepsy and diabetes. No such incentives appertain to dietary advice, or recommendations targeted at obese women of childbearing age
- Rising number of complex births: maternal obesity increases their likelihood and the consequent drain on time and resources for healthcare professionals leaves them little time to spare to give lifestyle and nutritional advice to prospective parents
- Presentational delay: 39% of pregnant women do not visit a GP or midwife until they are between five and ten weeks pregnant
- 'Old Wives' Tales' about nutrition during pregnancy: the most common being 'eating for two'
- Difficulty in reaching those most in need: disenfranchised groups tend to have the least healthy general diets (*Public Health England 2013. 'Social and economic inequalities in diet and physical activity: http://www.noo.org.uk/uploads/doc/vid_19253_Social_and_economic_inequalities_in_diet_and_physical_activity_04.11.13.pdf*)
- Advice that is reactive and negative: dietary advice from healthcare professionals can be 'don't do this or that' rather than a proactive and evidence-based approach to the promotion of healthy eating.

The months of pregnancy should also be used by the healthcare professional to engage with prospective parents about options for feeding a baby once it is born. This is an ideal time to promote breastfeeding whilst also supporting the emotional health of the mother, offering '*pregnant women (with) the opportunity for a meaningful discussion about feeding their baby that takes into account their individual circumstances and needs*' (*UNICEF UK Baby Friendly Initiative, Guide to*

the Baby Friendly Initiative Standards, December 2012).

https://www.unicef.org.uk/wp-content/uploads/sites/2/2014/02/Baby_Friendly_guidance_2012.pdf

Prospective parents need all the support and advice that they require to get feeding right for the as yet unborn child.

However, as with advice (or lack of it) available to pregnant women about their own nutritional needs, forward planning about feeding the coming baby leaves much to be desired. Research undertaken by independent market research company, Synergy Healthcare Research has uncovered a widespread, critical lack of education, information and support with regard to infant feeding (*Synergy Healthcare Research 2014 'Healthcare professionals Infant Nutrition Audit: Are we empowering parents to make informed choices about feeding their infants?'*). Synergy conducted quantitative and qualitative research amongst midwives and health visitors in England during 2014 and similar research in Scotland during 2016. The consistent finding from both studies was that many parents only receive advice on breastfeeding and are frequently uninformed about formula feeding. A significant number of midwives and health visitors said that they only gave information about formula feeding if the parents took the initiative and specifically requested it. In both England and Scotland it appears that in some cases this was down to an erroneous belief that the Baby Friendly Initiative (BFI) national standards only permit them to communicate about breastfeeding. In addition, there were gaps in the midwives' and health visitors' own knowledge about infant feeding and they experienced some embarrassment because of this. It is therefore highly probable that the bottle-feeding choice parents eventually make will be uninformed.

It is of course highly desirable that new mothers should breastfeed, but it seems that the balance has tipped too far. Citing the *WHO International Code of Marketing Breastmilk Substitutes*, the former Member for Stafford (a self-professed champion of breastfeeding) stated *'Governments should have a responsibility to ensure that parents receive objective and consistent information on both breastfeeding and the safe and appropriate use fo formula'* (*HC Deb 19th Jan 2008 Vol 470 Col 281 WH*). The point is that lack of, or late, provision of information about formula feeding could lead to potentially unsafe practices. 17% of midwives and 18% of health visitors do not typically give advice on the safe preparation of formula feed and 37% of midwives and 52% of health visitors agreed that the only information some new parents receive about formula feeding comes from family and friends. Antenatal visits are too short and a requirement to observe a check list when providing information (which focuses on breastfeeding) means that healthcare professionals have less time for discussion and engagement

with prospective parents as illustrated by a comment from a London midwife, made during the course of the 2014 research:

'(Antenatally) we're now booking 45 minute appointments, down from 1 hour, so we give them more information on a CD Rom that clearly nobody ever puts in a computer. We used to talk to them, start a conversation, now we have a checklist.'

It is not midwives and health visitors alone who recognise shortfalls in the system because a survey conducted in 2014 by the Royal College of Midwives (*'Infant Feeding: Supporting Patient Choice, Pressure Points,' Royal College of Midwives, May 2014*) found that 76% of women who had chosen to bottle feed said that they were not given enough active support and encouragement in doing so.

<https://www.rcm.org.uk/get-involved/campaigns/pressure-points>

At the pre-conception stage, a doctor addressing the couple will frequently concentrate attention upon the female partner as she will be carrying the child and feeding the baby with her nutrients. In the past, there was insufficient scientific understanding to assert a nexus between obesity and male reproductive condition the latter being deemed *'far too unspecific to quantify'* (*Health Committee, 'Obesity' Third Report of Session 2003-04 HC 23-1*) However, recent studies have found that obese fathers are more likely to have obese children. Recent research has suggested that this is not due to environmental factors alone but also due to factors passed down in pre-conception.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3521747/>

Male obesity in men of reproductive age has nearly tripled in the past 30 years and coincides also with an increase in male infertility worldwide (*'Spermatogenesis' 2012 Oct1;2(4): 253-263 Impact of obesity on male fertility, sperm function and molecular composition: Nicole O. Palmer; Hassan W. Brooks; Tod Fullston; Michelle Lane*).

There is now emerging evidence that male obesity impacts negatively upon male reproductive potential – not only reducing sperm quality, but in particular altering the physical and molecular structure of germ cells in the testes and ultimately mature sperm. Further recent data has also shown that male obesity impairs the metabolic and reproductive health of offspring, suggesting that paternal health cues are transmitted to the next generation with the mediator most likely occurring via the sperm. The increasing prevalence of male obesity calls for better public health awareness at the time leading up to conception. In addition to increasing the likelihood of offspring obesity, there is also evidence in animal models to show that paternal obesity increases the susceptibility of the child to certain chronic diseases such as diabetes. However, whilst the negative impacts of male obesity are becoming clearer, it is equally clear that simple interventions

such as changes to diet and exercise can reverse both the disease state and the adverse offspring outcomes. Therefore the pre-conception conversation with a doctor should include the development of public health messages with men considering fatherhood alongside messaging for their female partner.

In summary, there is much that needs to be done with regard to encouraging both parents to lead healthier lifestyles during a pregnancy; the provision of advice that encompasses weight management, breast and formula feeding and pre-conceptual lifestyle advice. At present, many couples do not speak to healthcare professionals prior to conception either because they conceive quickly or the pregnancy is unplanned. Yet we should encourage education on this subject at any given opportunity for adults of child bearing age and ideally this should be included as part of the National Curriculum in schools.

Recommendations:

- 1.1 Advice given to adults of child bearing age should be offered to both males and females about healthy lifestyles to include details about the impact their current weight can have upon the health of their future children
- 1.2 The above public health information should form part of the National Curriculum and be delivered in schools
- 1.3 The UK should review the suitability of the IOM weight guidelines, BMI and other (such as waist to hip) methods of weight measurement and devise uniform UK guidelines
- 1.4 Women seeking advice about planning a pregnancy should receive personalised weight gain advice and the first (and all subsequent) antenatal appointment(s) should include measurement of weight
- 1.5 A government campaign should be instigated to raise awareness of the links between overweight/obese parents and infertility, offspring obesity and offspring chronic disease
- 1.6 The advice to stop smoking in pregnancy should be widened to include the link to obesity in unborn children
- 1.7 Increase in frontline staff; there is a significant shortfall in the numbers of midwives and health visitors currently working in the UK
- 1.8 Advice on healthy lifestyle and good nutrition to be embedded in the content of antenatal visits
- 1.9 Advice about formula feeding and the safe preparation of formula food to be a full part of the antenatal experience. Whilst still stressing the optimum benefits of breastfeeding it is important that women are not made to feel bad mothers/failures if they bottle feed
- 1.10 More funding and government support for the entire range of maternity services. Lack of time and resource encourages a deleterious tick box

culture that discourages the building of parental confidence and meaningful relationships with healthcare professionals.

2. THE ROLE OF MIDWIVES, HEALTH PROFESSIONALS AND HEALTH VISITORS AT BOTH ANTENATAL AND POSTNATAL STAGES WITH REGARD TO THEIR OWN TRAINING NEEDS SO THAT THEY ARE PROPERLY EQUIPPED TO OFFER ADVICE THAT IS UP TO DATE AND PERSONALISED

The prevalence of obesity in women of reproductive age world-wide is increasing in both low-to-middle-income and high-income populations and can impact the health of at least two generations. It not only affects the woman's health, by raising her risk of gestational diabetes (and, in the longer term, type two diabetes and cardiovascular disease) but additionally places her offspring at risk, particularly of developing childhood obesity and its later consequences - and so the cycle repeats. The critical role played by healthcare professionals in promoting healthy eating and lifestyle patterns for both parents and their children cannot be overstated. They are ideally placed to offer support from conception through pregnancy and beyond but there is a wider understanding now of the value of earlier intervention. The *Lancet 'Diabetes and Endocrinology 2016'* <http://www.thelancet.com/series/maternal-obesity> highlights the need for a firm focus on the pre-pregnancy period, combined with a 'whole of society' intervention-based stance, to reverse the cycle of ill health propagated by maternal obesity.

Further research is required into the long term effects of nutritional and lifestyle interventions before conception, but what is imperative is a change in mindset. The general findings that individual interventions, of themselves, are not sufficient and '*need to be underpinned by broader, population-level interventions*' must continue to be advanced (*Health Committee, 'Impact of physical activity and diet on health,' Sixth Report of Session 2014-15*). Raising awareness of the importance of good health in the period before pregnancy will require a new social movement: combining bottom-up mobilisation of individuals and communities with a top-down approach from policy initiatives. Midwifery services and health bodies need to address this in a more integrated and 'joined up' way (*Commission on Ending Childhood Obesity. 'Ending childhood obesity': www.who.int/entity/ending-childhood-obesity/final-report/en/*.)

Most newly pregnant women and those seeking advice about starting a pregnancy will make their general practice the first port of call. The overwhelming instinct is to trust the advice and authority of healthcare professionals but unfortunately, the maternal obesity epidemic has struck during one of the most challenging times for primary care and public health due to budgetary restrictions, service cuts and thence a lack of resources to update skills and refresh training. The urgent need

for improved training from the start for those in the medical profession is advocated by GP Dr Rangan Chatterjee who has said:

'One of the problems is that in medical school we are mostly taught a model of care suitable for acute problems that is primarily pharmaceutical based. However, the health landscape in the UK has changed dramatically over the past few years. The vast majority of chronic problems that I see today – such as type two diabetes, obesity, gut problems, insomnia and headaches – are largely driven by lifestyle choices.'

'I believe that there is a strong case to put nutrition and lifestyle at the heart of medical education so that we can better serve our patients. It is time to change the trajectory of chronic disease that is already making the NHS as well as many other healthcare systems unsustainable.'

Dr Aseem Malhotra, a London-based consultant cardiologist and advisor to the National Obesity Forum, also calls for mandatory training for medical students and practising doctors in evidence-based lifestyle interventions to prevent and treat chronic diseases. The need for doctors to be best equipped in this way when advising women at the pre-conception/pregnancy stage is illustrated by the exhaustive list of potential adverse outcomes for mother and baby of maternal obesity.

These include:

- Gestational diabetes
- High blood pressure and depression
- Birth complications and wound infection resulting in longer hospital stays
- Stillbirth and congenital anomalies
- Macrosomia
- Foetal distress
- Foetal growth restriction
- Increased risk of neurodevelopment disorders including cerebral palsy
- Low Apgar score at five minutes
- Post date and pre-term deliveries.

In addition to the immediate adverse implications for pregnancy and birth, mounting evidence pinpoints maternal obesity as a major determinant of offspring health during childhood and beyond. Observational studies supply evidence for the effects of maternal obesity on a child's risks of obesity, coronary heart disease, stroke, type two diabetes, poorer cognitive performance and asthma. There is even limited evidence from Sweden that maternal obesity in early pregnancy may be associated with an increased incidence of type-one diabetes in the offspring of parents who do not have this disease.

It would seem that the entire maternal service workforce is under-resourced, overstretched, under immense pressure and all too well aware of the negative impact that gaps in knowledge will have upon the quality of support that is offered.

Many of these healthcare professionals consider that they have neither sufficient time, training or tools to offer new and prospective mothers the most appropriate type of advice and guidance and this is supported by Infant and Toddler Forum research (*2014 as earlier*) showing that more than one third of health visitors and midwives do not receive training on lifestyle advice during pregnancy. The study also revealed that over half are unaware of the NICE guidelines on nutrition in pregnancy and one in three has had no training whatsoever in pregnancy nutrition or infant breastfeeding. A shocking 43% had received no training at all in obesity during pregnancy. The England and Scotland research by Synergy (*2014, 2016 as earlier*) found that midwives wanted more information about the specifics of bottle feeding such as the ingredients and different types of formula; which formula milks are best for which situations; how to make formula milk up safely; how to use instant-preparation bottle machines or how to advise mothers on how best to maintain breastfeeding after returning to work.

Some typical questions that midwives and health visitors struggled to answer are listed in the Synergy research as:

- Which formula should I use? What are the differences? Which is the most like breast milk? Should I use natural supplements/organic feed?
- Can I breastfeed if I am taking medication?
- My baby isn't feeding well on formula. I've used the colic milk/comfort milk – should I? What's best?

The messaging points to the existence of an acknowledgment by a significant number of healthcare professionals that there are some serious gaps in their knowledge and training (The Infant and Toddler Forum 2014 research revealed that 23% for example, admitted that they had little or no knowledge of nutrition during preconception and pregnancy). This does nothing to sustain the new mother's confidence both before and after birth in making optimum nutritional choices for herself and her baby and the maternal service for both provider and user is capable of considerable improvement.

The specific training needs of healthcare professionals at the pre, ante and post natal stages of pregnancy may be listed as follows:

Prenatal

According to NICE guidelines (*Weight management before, during and after pregnancy, 2010, NICE, London: NICE Public Health Guidance 27*) all healthcare professionals dealing with women in the prenatal period (including GPs, Early Years Staff, Children's Centre Staff and supporting healthcare staff including health trainers and healthcare assistants) should receive training in:

- Health risks to both the mother and baby of being obese during pregnancy and of the effects obesity can have on the chances of conception
- Frontline nutritional guidelines and physical activity advice
- Components of effective weight loss programmes
- Signposting information for local healthy lifestyle programmes.

Antenatal

During the antenatal period, health visitors are the primary contact for most pregnant women, thus making them the key instigators of healthy conversations around weight. However, most state a lack of knowledge about weight gain and healthy lifestyle guidance during pregnancy as surveys have shown, and this, combined with an unease/embarrassment in raising weight as a topic for discussion, means that the issue is often ignored even when it could pose severe and detrimental risks to both mother and baby (*Smith D, Lavender T: The pregnancy experience for women with a body mass index.30kg/m²; a meta-synthesis. Br J ObstetGynaecol. 2011,118:779-789.*

World Health Organisation: Recommendations on antenatal care for a positive pregnancy experience. WHO. 2016 Geneva: WHO

Heslehurst N, et al: Obesity in pregnancy; a study of the impact of maternal obesity on NHS maternity services. Br J ObstetGynaecol.2007, 114:334-342).

Health visitors (along with any other healthcare professionals working with antenatal women) urgently require training in the following areas:

- Assessment - how to properly assess current nutrition status and physical activity guidelines against national guidelines and how to take proper weight and height measurement
- National Guidelines – for weight gain during pregnancy and physical activity and nutrition guidelines during pregnancy
- Raising the issue of weight – in a sensitive, non-judgemental manner during the antenatal period using appropriate wording so as not to offend or impede the relationship between health visitor and patient
- Labour and delivery guidance – around possible complications with labour and delivery, guidance for the labour and delivery of obese women and manual handling techniques and the use of specialist equipment which may be required for pregnancy and postnatal women who present as obese

- Signposting - to maternal obesity pathways or other support services for weight management during pregnancy.

Postnatal

During the postnatal period, contact with maternal healthcare professionals may be lost, thereby signalling a need for sources of community support. These may include nursery nurses, Children's Centre staff, Early Years staff and community breastfeeding support workers, all of whom would require training on postnatal obesity management and prevention, in addition to appropriate training for health visitors, midwives and other healthcare professionals who would generally be seen as the primary point of contact. NICE (*as earlier*) the Royal College of Physicians (*Royal College of Physicians: The Training of Health Professionals for the Prevention and Treatment of Overweight and Obesity. 2010, London: RCP*).

Organisations such as The Infant and Toddler Forum and The Royal College of Midwives advocate the following training for all those working with postnatal women:

- Guidelines on weight loss after pregnancy
- Postnatal nutrition and physical activity guidelines
- Effects of breastfeeding on weight loss; how to provide support to encourage breastfeeding
- Effective strategies to achieving postnatal weight loss and signposting to local services
- Guidelines on formula feeding.

In addition to all of the above, there is an emergent need for healthcare professionals to receive advice and training in the (as yet, relatively unexplored) psychological impact of obesity during pregnancy. The Centre for Maternal and Child Enquiries (CMACE) has considered this issue (*'Maternal obesity in the UK: Findings from a national project', London CMACE, 2010*) and there is obvious potential for further research.

Training delivery options are summarised well in a 2016 publication (*Smith DM et al: Maternal obesity is the new challenge; a qualitative study of health professionals' views towards suitable care for pregnant women with a Body Mass Index (BMI) >30 kg/m². BMC Pregnancy and childbirth. 2016, 16:157*):

'Tailored training is vital if maternal obesity guidelines are to be implemented effectively... Training should be delivered in two ways; through continuing professional development (CPD) and as an addition to the relevant university syllabuses (e.g., public health module). Increasing the knowledge of newly qualified

health professionals may in turn increase their confidence and ability to discuss the issue of obesity'.

In 2010, a report from the Centre for Maternal and Child Enquiries (*'Maternal obesity in the UK: findings from a national project,' CMACE 2010*) noted that although *'97% of all women reported to CMACE during the observational cohort study had an antenatal weight recorded...documented evidence of a postnatal referral to a dietician or nutritionist was found for only 4% of women.'* The scenario was added to in 2013 by a report from the National Federation of Women's Institutes (*'Support Overdue; Women's experiences of maternity services 2013'*) in which the statement was made that *'during their first antenatal appointment, 61% of women said their midwife did not have enough time to discuss their concerns about weight management and nutrition.'*

It is clear, therefore, that training for healthcare professionals throughout the maternal services workforce is at the very least, uneven, and impacting adversely upon the service they offer, but good models do exist and should be collated. Dr Cheryll Adams, Director of the Institute of Health Visiting (iHV) has said in response to the 2014 annual report from the Chief Medical Officer (*'Health of the 51% women'*):

'The Institute is very much aware of the impact of being overweight on the physical and emotional wellbeing of mothers and their children – healthy weight, healthy nutrition being one of the Department of Health's High Impact Areas for health visitors. To support this, the iHV is rolling out new Healthy Weight, Health Nutrition Champions Training for health visitors in the New Year. In addition, we have our new Ready Steady Mums community activity programme to get new mums together and become active with their children'.

The above iHV-led programme is a new item contained within the iHV's highly acclaimed 'Champions' training portfolio and offers participants the opportunity to assume a training role for their own organisation. Building upon existing knowledge, the programme explores why good nutrition matters across the life span and stresses the importance of supporting women and their families to eat well. It is endorsed by Public Health England and was developed in collaboration with First Steps Nutrition.

The iHV-led Ready Steady Mums (RSM) programme is a national network of community activity groups for mothers. The programme offers health visitors a proven tool to help mums overcome feelings of isolation and depression, whilst also improving their physical, social and emotional wellbeing.

Another initiative designed to support healthcare professionals is Public Health England's Making Every Contact Count (MECC). The measures aim to alter the way in which healthcare professionals interact with people to facilitate a mutual 'Healthy Conversation' rather than imposing unsolicited advice. Underpinning the approach are strategies that the HCP can use to tailor conversations with patients. Key components in Healthy Conversations are:

- Cue - a hook which helps the patient/client to raise a subject or vice versa
- Conversation - a brief intervention/small change of behaviour can be offered
- Conclusion - signposting follow up/specialist support services.

In addition to the clinical staff who will be concerned with the care of pregnant women, the UK has 172,686 Allied Health Professionals (AHPs) but a 2015 survey of 2000 of these workers conducted by The Royal Society for Public Health and Public Health England found that their readiness to deliver MECC was impeded by issues of confidence, signposting and time pressure. This concern has been raised within Parliament on numerous occasions:

'It is worrying that the progress and roll-out of that scheme is patchy' (HC Deb 22 Nov 2016 Vol 617 Col 296 WH) A publication from The Royal College of Midwives (*Pressure Points 2014: <http://www.rcm.org.uk>*) similarly found that *'midwives and maternity teams feel frustrated and helpless under the increasing pressure.'*

If properly resourced and rolled out, MECC training for HCP and ACP workers is ideally placed to enable women to receive lifestyle and nutritional counselling (and possibly pharmacological treatment) before, during and after pregnancy and will be an important component in the battle against childhood obesity before children are even part of the equation. However, this careful, holistic and people-centred manner of working with patients will require priority funding now to achieve health and financial savings throughout the life course.

As a matter of first instance, it is imperative that the Government ascertain the extent of MECC implementation. The former Minister of State for Community and Social Care (a post now amalgamated with the Parliamentary Under Secretary of State for Community Health and Care) was asked this very question; however, the answer given was less forthcoming than we would have expected (*HC Deb 11 July 2016 CW*).

There are a number of other schemes, recommendations and national guidelines that are available to assist the healthcare professional and Allied Health Professional in their dissemination of advice to patients. These include:

- The Healthy Start Scheme and the entitlements for families:
<https://www.healthystart.nhs.uk/>

- The Eatwell Guide: <http://www.nhs.uk/Livewell/Goodfood/Pages/the-eatwell-guide.aspx>
- Maternal and child nutrition (*NICE quality standard {QS98} : July 2015*)
- Weight management before, during and after pregnancy (*NICE guidelines {PH27} July 2010*)
- Postnatal care (*NICE quality standard {QS37} July 2013, updated July 2015*)
- Early Life Nutrition Support (2001)
- Folate and disease prevention (2006)
- UNICEF UK Baby Friendly Initiative: <http://www.unicef.org.uk/babyfriendly>

Also, a range of training sessions designed to assist healthcare professionals (such as health visitors and midwives) in the provision of practical information to families are offered by the Early Start Wellbeing and Nutrition Team:

<https://www.earlystartgroup.com/home/early-start-wellbeing-and-nutrition>

The Royal College of Midwives has also broken new ground with its development of some excellent online resources and the promotion of i-learning. However, regardless of the quality of the guidance on offer, time pressures and financial strains make it highly unlikely that healthcare professionals will always be completely up to date. If maternity services are to be fully supported by continuous updating of the latest information, more time and money need to be found. There is also a strong case for collaborative working with other sectoral organisations such as the pro-breast-feeding groups The National Childbirth Trust and La Leche League who have relevant material on their websites about eating and weight information.

It is clear that the roles of healthcare professionals and Allied Health Professionals are of vital importance, but the optimum support to women and their families will be bolstered by constantly updated information. The process should be implemented from initial training through continuous professional development (CPD) modules in the workplace and the public at large should be informed about healthy lifestyle factors via government public health campaigns and in educational settings such as schools 'practising what is preached.' A long term view must be taken because money invested today will have an impact on funding, future budget and most importantly on the outcome for maternity services and the women and children for whom they have been designed.

Maternal obesity is now recognised as an extremely serious issue. As such, it deserves serious investment.

Recommendations

2.1 Development of clear UK guidance on appropriate weight gain during

- pregnancy
- 2.2 Routine weighing of pregnant women to be mandatory, regardless of their starting BMI. Currently only obese women are weighed; thus creating stigma. If all women were weighed routinely, weight monitoring would be normalised with an opportunity for the HCP to offer appropriate interventions for those gaining excessive (or inadequate) weight
 - 2.3 Routine diagnostic antenatal checks for gestational diabetes
 - 2.4 Quality and Outcomes Framework Indicators (QOF) to include Maternal Obesity; GP incentives for preconception counselling services to be widened to include obesity
 - 2.5 Public health awareness campaigns, communicating important diet and lifestyle choices: dispelling myths such as 'eating for two'
 - 2.6 Training in nutrition for healthcare professionals working with women and families before, during and after pregnancy
 - 2.7 Stakeholder partnership to improve understanding and awareness of dietary and lifestyle advice: highlighting what women planning pregnancy or pregnant can eat/should eat rather than lists of foods to avoid
 - 2.8 More time to be allocated for healthcare professionals to have contact with prospective and new parents; discouragement of the 'tick box' culture that impedes the establishment of personal relationships
 - 2.9 Government to collect and disseminate regular data on the prevalence of maternal obesity and to fund research into the long-term effects of nutritional and lifestyle interventions before conception
 - 2.10 Government to collate and disseminate data on the financial cost of maternal obesity in the UK to inform resource-based decision-making about services and training and the Quality Care Commission to investigate the national take-up of MECC.
 - 2.11 Complete review and redesign of training for healthcare professionals from university/college courses onwards including regular updating as part of continual professional development (CPD) and use of apps/and online modules
 - 2.12 Mandatory training of medical students and practising doctors in evidence-based lifestyle interventions on the prevention and treatment of chronic disease
 - 2.13 Issue guidance for midwives about how to advise women on weight management in pregnancy via a national standard for the training of midwives to help them effectively engage and sensitively raise the issues of overweight and obesity; making them familiar with options for signposting and providing an understanding of the emotional, physical and mental difficulties that women suffering from overweight may experience, thus instilling the need for a caring and compassionate

approach.

3. MATERNAL WEIGHT BEFORE, DURING AND AFTER PREGNANCY

The UK's rate of maternal obesity tops the European chart (*Devlieger, R et al., 2016 'Maternal obesity in Europe; where do we stand and how to move forward?' A scientific paper commissioned by the European Board and College of Obstetrics and Gynaecology (EBCOG). 'European Journal of Obstetrics, Gynaecology and Reproductive Biology, 201, pp.201-208*). An overweight or obese pregnancy heightens the risk of complications for mother and baby (*NHS Choices 2016. Gestational Diabetes*) and pregnancy is a significant factor in the development of obesity, irrespective of weight level prior to conception. However, about half of women of childbearing age (16 – 44 years) in England are either overweight or obese today and the prevalence of obesity in this group has increased from about 12% in 1993 to over 19% in 2013 (*Public Health England, 2016. 'Prevalence of maternal obesity'*):

https://www.noo.org.uk/NOO_about_obesity/maternal_obesity_2015/prevalence

Obesity can cause complications in pregnancy even before conception. A woman with a BMI (body mass index) of over 40 is seven times likelier to take over a year to conceive than one with a healthy BMI of 20-25kg/m (*Hanson M, Gluckman, P, Bustreo F, 2016 'Obesity and the health of future generations'*) and obese women on IVF programmes achieve 68% fewer live births than those with a normal BMI. For obese women who do become pregnant, difficulties may be only just beginning because obesity during pregnancy is associated with a range of both immediate and long term health risks for mother and child. These include:

- Pre-eclampsia
- Gestational diabetes – 4-9 times higher in obese women
- Miscarriage – 30% higher in obese women
- Need for caesarean section
- Thromboembolism
- Stillbirth – 19% higher in obese women
- Neonatal death
- Overweight babies
- Pre-term birth
- Neural tube defects
- Hydrocephaly
- Cardiovascular complications
- Orofacial defects
- Limb reduction
- Anorectal malformation
- Shoulder dystocia

- Post-partum haemorrhage or PPH
- Early induction of labour or premature birth (before 37 weeks) causing difficulties associated with prematurity.

In addition, maternal obesity can presage a pernicious vicious circle in which both mother and child are at increased risk of being overweight and obese throughout the life course. In the short/medium term, an obese pregnancy is a self-perpetuating ill. Women who have had a high gestational weight gain (GWG) are likelier to embark upon the next pregnancy with a higher body mass index and looking farther ahead, women who have had a high GWG tend to retain more weight at 15 year follow-up (*Linne, Y., Dye, L., Barkeling, B., Rossner, S., 2004 'Long-Term Weight Development in Women: A 15-Year Follow-up of the Effects of Pregnancy, Obesity Research' 12 (1166-78)*). An obese pregnancy also has financial implications; antenatal care costs could be 15-16 fold higher in overweight or obese women (*Heslehurst, N., Lang, R., Rankin, J., Summerbell, CD., 2007 'Obesity in pregnancy: a study of the impact of maternal obesity on NHS maternity services,' British Journal of Obstetrics and Gynaecology 114:334-43*) and typically in the UK, women with a BMI of 40 plus will be supervised by a consultant. None of this should come as a shock; the economic, yet avoidable, burdens of maternal obesity were highlighted in the Lords as a secondary consideration nearly nine years ago:

'Serial scans may be required to assess foetal growth, foetal monitoring by an external transducer may be needed and a foetal scalp electrode may be applied if the foetal heart is impossible to record. Delivery may have to take place in a consultant unit or, if an emergency caesarean must be carried out, two obstetricians are required to be present' (HL Deb 9 June 2008 Vol 702 Col 439) Neither will delivery of the baby necessarily stem the financial drain; costs to the NHS of obese pregnancy-incurred disease for both mother and offspring may be ongoing.

This forms part of the wider public health crisis; patching up with plasters won't do anymore. As noted recently by the Health Committee, it is a concern that, despite obvious economic evidence in favour of prevention, *'spending on public health currently accounts for just over 4% of total health spending'* (*'Public health post – 2013,' Second Report of Session 2016-17 HC 140*).

New parenthood is in force, a challenging time, but an obese pregnant mother can encounter further problems after the birth. Public Health England (*'Maternal Obesity and Pregnancy Outcomes 2016'*: http://www.noo.org.uk/NOO_about_obesity/maternal_obesity_2015/pregnancy_outcomes) cites evidence to demonstrate that overweight and obese mothers have a greater risk of experiencing difficulty in breastfeeding. This is supported by an earlier systematic review in 2012 which found that maternal obesity was a risk

factor for decreased intention and initiation of breastfeeding, a shortened duration of breastfeeding and a less adequate milk supply (Turcksin R., Bel S., Galjaard S., et al. 'Maternal obesity and breastfeeding intention, initiation, intensity and duration: a systematic review.' *Maternal and Child Nutrition* 2014; 10(2):166-83).

Maternal obesity in pregnancy has disadvantageous effects on the foetus. Excessive sugars consumed during pregnancy cross the placenta in the form of glucose increasing the baby's tolerance and taste for it. As additional fat cells are laid down, rapid foetal weight gain is facilitated and studies show that babies' thirst and appetite-mediated behaviour are developed and their set-points are likely to be programmed in utero. Children's dietary habits are formed early and effectively remain unchanged, condemning children as young as five to obesity. This in turn renders them likelier to become obese adults. In addition to the potential for adverse conditions presenting in the newborns of obese women (as listed earlier) a high birth weight and then infant obesity may predispose a child to insulin resistance, cardiovascular diseases, hypertension and metabolic syndrome. Other conditions to which the child may be susceptible are increased cholesterol levels, diabetes and orthopaedic ailments. Some research has shown that obesity in girls may trigger premature onset menstruation and increasingly, the likelihood of eating disorders with resulting adverse impact on children's mental health and school performance (Datar A., and Sturm R., 2006 'Childhood overweight and elementary school outcomes', *International Journal of Obesity* 30:1449-60). Even if the excess weight is subsequently lost, residual unhealthy behaviour, loneliness and nervousness may persist (Hardy, LR., Harrell JS., and Bell RA., 2004 'Overweight in children: Definitions, measurements, confounding factors and health consequences.' *Journal of Pediatric Nursing* 19: 376-84). With current statistics showing obesity in 22% of 4-5 year olds rising to 33% at ages 6-7 and projected life spans decreasing for the first time in history, these trends must be addressed.

Women need to understand the extent of what being obese means to their health and that of their unborn child, but (partly because the UK currently has no evidence-based recommendations on appropriate weight gain in pregnancy) the advice on offer can be random, non-existent or confusing, especially if a woman is already overweight or obese. Healthcare professionals are often uneasy about raising the issue of maternal obesity and referral options and evidence-based interventions to tackle obesity during pregnancy are limited. There is a place for accessible leaflets on healthy foods and lifestyle, but what is needed is 'hands on' personalised guidance enabling women to make practical changes. Cohesive, holistic action is required; uniting multiple organisations and agencies alongside effective government support. It should start within the education system and offer advice to pre-pubescent girls.

This would be in keeping with the Department of Education's own observations of the renewed National Curriculum in 2015:

'Schools have a key role to play in teaching children about healthy lifestyles' (HL Deb 4 Nov 2016 PQ 2208).

Increasingly, respected evidence-based organisations are uniting to press the case for concerted action on weight management in pregnancy and one example of this is the alliance between The Royal College of Midwives and Slimming World; a provider of specialist support to women during pregnancy as well as before and afterwards.

The need to strengthen and widen the research base on pregnancy weight gain is now widely deemed to be essential. NICE guidance is clear that restrictive diets and weight loss during pregnancy should be avoided (*National Institute for Clinical Excellence (NICE) 2010 Public Health Guidance 27: 'Weight management before, during and after pregnancy'*). Some evidence suggests that inadequate gestational low weight gain may be a risk factor for intrauterine growth restriction, preterm birth, low birth weight and perinatal mortality, but little has been done to examine the effects in an already obese pregnant population. There is also comparatively little evidence for diet and lifestyle interventions on important obesity-related maternal outcomes such as pre-eclampsia, gestational diabetes, gestational hypertension and preterm delivery. It is worth also asserting that NICE guidelines are just that – guidelines – and do not have substantive authority; neither do they impose a duty on a decision-maker, although it has recently been held that they do constitute a relevant consideration for the purpose of judicial review. The 2010 NICE guidance on weight management is due to be reviewed in 2017 and it would be strengthened by including material on:

- Women who are underweight (that is, those who have a body mass index [BMI] less than 18.5 kg/m)
- Clinical management of women who are obese during pregnancy
- Those who have been diagnosed with, or who are receiving treatment for, an existing condition such as type one or type two diabetes
- Food safety advice.

In its 2007-08 Session, the Health Select Committee produced a report '*National Institute for Health and Clinical Excellence HC-27-1*'. In evidence to the Committee, Diabetes UK stated:

'There are inherent difficulties with the position of NICE as their recommendations are neither mandatory but neither are they insignificant in their weight. Therefore there will always be the opportunity for recommendations to be used both positively to seek best care for patients but also negatively to restrict without good

reason access to best care and this can hinder the recognition by healthcare professionals of more recent clinical evidenced that may contradict NICE recommendations.'

Noting that *'The implementation of non-mandatory guidance is variable,'* the Committee recommended *'That some elements of clinical guidance be made mandatory.'*

Matters concerning obesity (and encompassing obesity in pregnancy) seemed to be particularly susceptible to disregard by health practitioners. In evidence to the Committee, Weight Watchers UK Ltd (citing the Office of Health Economics *'Shedding the pounds, obesity management, NICE guidance and bariatric surgery in England 2010'*) observed that 10% of Primary Care Trusts (PCTs were abolished by the Health and Social Care Act 2012 and their functions transferred to Care Commissioning Groups, the NHS Commissioning Board and local authorities) *'did not follow the NICE guideline on obesity (CG43-NICE,2006) and only 40% interpreted this guidance stringently (HC 782 II Ev w1)'*.

The LIMIT study (Dodd JM., Turnbull, D., McPhee, AJ., Deussen, AR., Grivell, RM., Yelland, LY., Crowther, CA., Wittert, G., Owens, JA., Robinson, JS., 2014 *'Antenatal lifestyle advice for women who are overweight or obese: LIMIT randomised trial' BMJ 358:g1285*) where healthy eating and exercise advice was offered to overweight or obese pregnant women showed a significant reduction in the number of babies born over 4kg in weight. Whilst the advice to adopt a healthy diet and regular exercise during pregnancy led to an 18% reduction in the likelihood of a baby being born over 4kg, there was no significant difference in the maternal weight change between the intervention and control groups. Also, the antenatal lifestyle advice used in the study did not lessen the risk of delivering a baby weighing above the 90th centile for gestational age and sex, or improve other pregnancy and birth outcomes.

The UPBEAT trial (also randomised and controlled) assessed an alternative approach in obese pregnant women (BMI 30kg/m) commencing around the beginning of the second trimester, and indicated that the interventions tested were insufficient to improve maternal or infant outcomes – at least short term. UPBEAT found that a behavioural intervention did not affect either of the primary outcomes tested: incidence of gestational diabetes or large-for-gestational-age infants (Post L et al *'Effect of a behavioural intervention in obese pregnant women (the UPBEAT study); a multicentre, randomised controlled trial'*). There are other carefully planned interventions, many of which have proved beneficial for other outcomes in non-pregnant women, but have shown little or no effect in the studies. Although promotion of a healthy lifestyle in pregnant women is essential, academic opinion appears to be coalescing around the finding that interventions targeting pregnant women are too little, too late.

Increasingly consensus is building around the need to intensify effort on lifestyle interventions as part of pre-pregnancy counselling in the roughly 50% of women whose pregnancies are planned (*The Lancet Diabetes and Endocrinology series December 2016*). The UK rate of unplanned pregnancy (especially in young adults) is high and advice on a healthy pre-pregnancy BMI should be broadly initiated as early as adolescence; ideally as part of public health initiatives, delivered in school and community settings, with the goal of reducing obesity in all young people. Advice to support pregnant women should be holistic and co-ordinated but it is now seen to be essential that a commitment to healthy lifestyles and positive eating habits is established long before a pregnancy occurs.

Finally, the increasingly diverse nature of the UK population brings with it a new range of issues impacting maternal obesity. Minority migrant populations have a young age structure (*Finney N., Simpson L., 'Population Dynamics: The role of natural change and migration in producing the ethnic mosaic.' Journal of Ethnic and Migration Studies 2009; 35(9); 1479-96*) with the main driver being natural growth (i.e. more births than deaths). In the 1990s, Census data demonstrated that the UK's population increased by 4% and of this, 73% came from minority ethnic groups which grew by about 1.6 million people compared with 600,000 in the White population. The fastest growing group was Black African (which more than doubled during the decade) whilst Bangladeshi, Pakistani and Chinese groups also saw rapid growth. In 2006, 21% of UK births were to mothers themselves born outside the UK, compared to 15% in 2001. In 2006, 5% of these births were to mothers born in Pakistan, India and Bangladesh, and 4% to women born in European Union countries other than the UK and the Republic of Ireland (*Dunnell K., 'The Changing Demographic Picture of the UK. National Statistician's Annual Article on Population: Population Trends' 2007:130:9-21*).

The prevalence of obesity varies considerably between the ethnic groups for both adults and children in the UK and adult obesity by ethnic group appears to differ according to the measurement method be it BMI, waist circumference or waist to hip. Black African women have the highest obesity prevalence when using waist circumference as a measure, Bangladeshi women when using waist to hip ratio and Chinese women appear to have the lowest obesity prevalence whichever measure is used. Debate continues about the definitions of obesity across ethnic groups; different ethnic groups have different physiological responses to fat storage. Revised BMI thresholds have been recommended for the South Asian population who are at greater risk of chronic diseases and mortality at lower BMI levels than the European population. It therefore follows that some aspects of pre-conception or antenatal guidance should be specifically tailored for women of different ethnic origins because of metabolic risk factors such as high BMI. In addition, the effectiveness of ethnic-specific approaches will require that information is

provided in different languages and that care is delivered in a culturally sensitive and appropriate manner.

Recommendations

- 3.1 A holistic, integrated national approach to nutritional and healthy lifestyle advice to target all adolescents both at school and in the community
- 3.2 Production and dissemination of UK evidence-based guidelines on weight management during pregnancy including ethnic-specific measures of BMI and obesity
- 3.3 Dietary assessment, advice and body weight measurement to be a mandatory component of the first midwifery visit with regular follow-up reviews through the planned visit cycle
- 3.4 Greater emphasis on the role of primary pre-conception clinics with guidance to both partners planning a pregnancy on nutrition, lifestyle and ideal pre-pregnancy BMI
- 3.5 Provision of improved education, training and resources for healthcare professionals, including instruction on how to best communicate messages about healthy nutrition and lifestyle to women planning to conceive or who are pregnant and guidance on ethnic and culturally specific advice
- 3.6 Government funded research into the long-term effects of nutritional and lifestyle interventions before conception and in-between pregnancies
- 3.7 An integrated approach to improve the pre-conception health of the population, including pregnancy prevention and planning and preparation; reaching beyond the primary healthcare sector and adopting a cross government department ecological approach to risk reduction that addresses personal, societal and cultural influences
- 3.8 Development and dissemination of national scalable interventions which support both overweight/obese pregnant women and pregnant women with a healthy starting BMI, to prevent excessive gestational weight gain and encourage healthy lifestyles
- 3.9 To break the vicious circle of obesity begetting obesity, there is an urgent need for evidence-based research to assess whether interventions in high-risk pregnant women which typically aim to reduce weight or improve glycaemia, can reduce the risk of adverse outcomes in offspring
- 3.10 Promotion of physical activity opportunities by means of subsidised classes for new and expectant mothers and subsidised childcare in gyms and swimming pools where the child is changed and brought to the mother at a set time for a joint swim

- 3.11 National recruitment drive to increase the numbers of midwives and health visitors
- 3.12 Continuing advice to the mother on lifestyle and weight monitoring to be part of the healthcare professional's post pregnancy care to ensure that after breastfeeding is discontinued a healthy BMI is regained or worked towards
- 3.13 Healthcare professionals to offer advice to ensure that a mother's mental health needs are addressed; this to include guidance about how a routine of eating well can promote positive mental health
- 3.14 Consideration of making some parts of the 2017 update of the maternal weight management NICE guidance mandatory.

4. THE ROLE OF SOCIOECONOMIC CIRCUMSTANCES IN RELATION TO MATERNAL OBESITY

The costs of obesity are huge; to the individual's health and quality of life and also to the NHS because of the associated financial implications. On top of that, the cost of obesity to the wider economy is estimated to be '*27bn annually*' (*Public Health England, 'Making the case for tackling obesity – why invest?' 2015*). By 2050 it has been estimated that 60% of adult men, 50% of adult women and 25% of all children under the age of 16 will be clinically obese in the UK (*Foresight, 2007, 'Tackling obesity: Future Choices' Summary of key messages. Government Office for Science*). The need to reverse this destructive trend has never been greater.

Today's obesogenic environment is characterised by an abundance of energy-dense food and increasingly sedentary lifestyles and this appertains throughout our entire society; however, people in the most disadvantaged group are at the highest risk of carrying excess weight. As in other developed countries, the pattern appears to be more distinct for women than men (*National Obesity Observatory, PHE: http://www.noo.org.uk?NOO_about_obesity/maternalobesity/Demographics-and_Health_Inequalities* and the causes of obesity encompass biology and behaviour within a defined environmental and societal framework. Much of the premature mortality and loss of healthy years seen in the lower socioeconomic groups are attributable to obesity-linked disease (*WHO Obesity and Inequalities 'Guidance for addressing inequalities in overweight and obesity', 2014*). Yet a 'single string' focus on targeted interventions aimed at disadvantaged communities living in areas characterised by 'food deserts' (where there is no fresh fruit or vegetable availability in local shops, only junk food) is not the best solution to the obesity epidemic; rather what is preferable is an alternative 'proportionate universalism' to reduce the steepness of the social gradient; whereby actions with sufficient scale and intensity proportionate to the level of

disadvantage must be applied universally. (*The Marmot Review, 2010 'Fair Society Healthy Lives' Institute of Health Equity*).

It is now accepted that ill health, as characterised by many of the obesity-linked chronic diseases such as stroke, coronary heart disease, type two diabetes, arthritis and cancer is linked to socioeconomic disadvantage - *NICE*:

<https://www.nice.org.uk/advice/lgb4/chapter/Introduction> . The social and economic determinants of health are the circumstances in which people are born grow up, live, work and age and include income, employment, education, the environment and systems that are established to address illness. These circumstances in turn are shaped by a wider set of influencing factors: economics, politics and social policy all of which can create health inequalities. The unequal distribution of the determinants of health produces health inequalities and health damaging behaviours; all of which are largely avoidable. (*NHS Scotland, 2010 'Antenatal health inequalities; a rapid review of the evidence'*).

The term 'socioeconomic status' is generally used to identify a person's status relative to others, based on their social and economic characteristics as outlined above and complementary measures have been developed to classify people into groupings. The measures are based upon individual, household or regional characteristics and are used to assess inequalities between social groups (*National Obesity Observatory 'Adult obesity and socioeconomic status'. Data factsheet, 2012, Public Health England; 2014*). Findings indicate that low socioeconomic groups appear to be roughly twice as likely to become obese, putting them at risk of the chronic diseases listed above; conversely, those enjoying a higher socioeconomic position in society have a greater array of life chances and thus more opportunity to flourish. They also have better health. At the other end of the spectrum, there is a clearly defined link between low socioeconomic status (especially for women and children) with obesity prevalence rising with decreasing socioeconomic status.

In a recent Health Inequality debate, the Member for Erewash (who sits on the Health Committee) asserted:

If current trends continue, about half of women from the lowest income quintile are predicted to be obese in 2035' (HC Deb 26 Nov 2016 Vol 617 Col 1091).

The National Obesity Observatory factsheet (as above) clarifies that although the link between obesity prevalence and socioeconomic status can be examined in different ways; regardless of the measure used, obesity levels in women rise with increasing levels of deprivation. Consequently there is a marked difference in prevalence between women of the highest and lowest income groups. Women with lower household income are likelier to be overweight or obese. Occupation-based social class also shows a strong relationship, with obesity levels almost twice

as high in women working in unskilled jobs than those employed in a professional capacity. Women with fewer qualifications linked to educational attainment have higher obesity prevalence and the Index of Multiple Deprivation 2007 (IMD) demonstrates that women who reside in the more deprived areas have higher levels of obesity than those in more affluent areas. In summary, for women, all indicators of socioeconomic status are likely to provide a good indication of obesity prevalence within the population.

It is also evident that the gap in health inequalities between rich and poor people is widening, with the poor becoming steadily more obese and the rich remaining nearer a healthy weight. This does not pertain to the UK population alone. Between 1998-2012 in France, the lowest income group became obese more than three times faster than those in the two highest income groups (*WHO Obesity and Inequalities, 'Guidance for addressing inequalities in overweight and obesity', 2014*).

There is mounting data illustrating that low socioeconomic status has a contributory effect on poor health and obesity. One study has analysed the impact of the 12% increase in food prices during 2007 on low income households (*Roberts K., Cavill N., Hancock C., Rutter H., 'Social and economic inequalities in diet and physical activity': Public Health England, 2014*). The study found that low income households were disproportionately affected with a 1.6% rise in expenditure on food compared with a 0.3% on average. The data also suggest that lower income households responded by purchasing cheaper food alternatives. Energy-dense foods of inferior nutritional value are (often) less expensive and more available in local convenience stores than more nutritious foods such as vegetables and fruit and relatively poor families with children buy food primarily to satisfy their hunger (*Robertson A., Lobstein T., Knai C., 2007, 'Obesity and socioeconomic groups in Europe: evidence review and implications for action', European Commission*).

A further contributory factor is geographical location. People in low income groups typically live in neighbourhoods with a denser supply of fast food outlets; less availability of fresh fruit and vegetables and less safe places for physical activity – especially for women and children. Fruit and vegetables can be 30-40% more expensive in poor neighbourhoods (*'Going hungry: the struggle to eat healthily on a low income': NCH, The Children's Charity, 2004: http://www.actionforchildren.org.uk/media/146002/going_hungry.pdf* and the most deprived neighbourhoods can have about four times the number of fast food outlets compared with advantaged areas (*Cummins SCJ., McKay L., Macintyre S., 'McDonalds' restaurants and neighbourhood deprivation in Scotland and England.' Am J Prev 2005 Nov: 29(4):308-310*).

The WHO report 'Obesity and Inequalities' (as above) demonstrates that obesity may also prompt adverse social impacts such as discrimination, social exclusion, lower earnings, more sick leave from work and unemployment - which in their turn, widen inequalities in health and social care. The impact upon future generations has something of a 'chicken and egg' quality. For example, the report supplies evidence that obesity in European children is strongly allied to the socioeconomic status of the parents, with the higher the level of income inequality, the higher the rate of childhood overweight. Incidence of breastfeeding is lower in mothers from lower socioeconomic groups and the women are likelier to be overweight themselves. Their children are more likely to develop poor eating habits and if they slip behind in their cognitive development by the age of three, they are unlikely to catch up again, which will have a knock-on effect to their educational attainment, earning potential and life chances. Hence they will be less likely to climb up the social scale and move out of a cycle of ill health. The report clarifies that obesity is related to poverty and is likely to be cascaded to successive generations. A key term in the report is 'differential vulnerabilities' i.e. social or biological vulnerabilities that contribute to inequalities. For example, low self-esteem may cause disadvantaged women to devalue their ability to breastfeed successfully, or babies born to obese women are more likely to develop obesity in later life whether their birth weight is high or low.

Obesity can therefore promote adverse social and economic consequences as well as be caused by them.

Socioeconomic factors are thus extremely influential during pregnancy and obesity in pregnancy is rising. Around one in five women attending antenatal care in the UK is now obese and this figure is likely to increase in the current obesogenic environment (*Heslhurst N., Rankin J., Wilkinson JR., Summerbell CD, 2010 'A nationally representative study of maternal obesity in England, UK: trends in incidence and demographic inequalities in 619 323 births', 189-2007. International Journal of Obesity 34: 420-8*). An Australian study demonstrated that overweight and obesity were prevalent in more than half of pregnant women with higher odds of this further down the social ladder. Moreover, obesity in women, especially during pregnancy contributes to their offspring's health risk and this amplifies health disadvantage across generations.

According to the National Obesity Observatory, many of the demographics of women who are obese when they are pregnant are similar to the demographics of obese women in the general population and they reflect health inequalities. Obese women are typically likelier to be older in pregnancy, to have a higher parity (the number of times a woman has given birth to a foetus with a gestational age of 24 weeks or more, regardless of whether the child was alive or stillborn) and are more than twice as likely to reside in areas of highest deprivation (*Heslehurst N. et al,*

'Trends in maternal obesity incidence rates, demographic predictors and health inequalities in 36 821 women over a 15 year period', BJOG: an International Journal of Obstetrics and Gynaecology 2007;114:pp.187-194).

A report from Scotland entitled 'Antenatal health inequalities; a rapid review of the evidence,' contends that *'inequalities appearing at pregnancy, birth and the early years often have a significant bearing on maternal health and subsequent development of the child, its health, happiness and productivity in society.'* The report maintains that social factors may impact negatively upon a woman's ability to access and make optimum use of antenatal care, citing that almost two thirds of pregnant women under the age of 20 attended no antenatal classes whatsoever. The irony is clear that poor and unequal access to health services adds to health inequalities but that those who are at the greatest risk of poor pregnancy outcomes (including obese pregnant women) are the least likely to access and/or benefit from the care that they need.

The Foresight report as previously mentioned, argues in favour of a 'whole system' approach to combat the obesity epidemic, including both whole population and targeted measures which encompass both central and local government, industry, community, families and society as a whole (*Foresight, 2007 'Tackling obesities: Future Choices' Summary of key messages', Government Office for Science*). This requires the adoption of measures that include the production and promotion of healthy diets, re-designing the built environment to increase walking and involving wider cultural changes to shift societal values around food and physical activity.

The WHO survey (as above) also concurs with a 'whole system' approach with better co-ordinated government action between the social, employment, education and health sectors as well as from retail, agriculture, finance and private sectors. Care must be taken to ensure that policies designed to tackle obesity do not have a counter-effect and result in widening existing health inequalities. The equity issue is therefore vital. There are several key national and international documents aimed at reducing health inequalities; for example, the European policy framework for health and well being 'Health 2020'

<http://www.euro.who.int/en/health-topics/health-policy/health-2020-the-european-policy-for-health-and-well-being/about-health-2020> . Its key strategic objectives are to reduce health inequalities and improve governance for health and health equity. The Department of Health Outcomes Framework 2013-2016 aims to improve and protect the nation's health and wellbeing and improve the health of the poorest fastest (*DH Public Health Outcomes Framework 2013-2016*).

The effectiveness of targeting strategies throughout the life course to prevent obesity has been well documented. NICE guidelines before, during and after

pregnancy (*NICE PH27, 2010 'Weight management before, during and after pregnancy'*) provide specific advice to commissioners and healthcare professionals to promote healthy weight and NICE guidelines on maternal and child nutrition aim to address disparities in the nutrition of low income and other disadvantaged groups compared with the general population (*NICE PH11, 2008 'Maternal and child nutrition'*). What is clear is that inequalities in socio economic circumstances are directly related to obesity incidence within our obesogenic environment. Women in lower socioeconomic groups are especially affected by this and as a result, their children are likelier to become overweight and obese. Tackling obesity therefore requires an intense focus on reducing inequalities in health between the social groups, and policies and interventions must be selected that do not inadvertently widen the health gap. A whole system approach, focusing on those with the greatest need across the life cycle particularly before, during and after pregnancy, can help combat rising obesity levels and reduce the socioeconomic inequalities from whence they stem.

Recommendations

- 4.1 A co-ordinated 'whole system' approach to tackling health inequalities with initiatives across departmental boundaries to be assessed to ensure that they do not widen the health gap between socioeconomic groups
- 4.2 Measures to ensure that the level of a minimum/living wage keeps pace with the cost of living via regular review
- 4.3 Increasing the availability of healthy foods in all neighbourhoods and reducing the price
- 4.4 Promote healthy eating and physical activity through comprehensive pre-school and school policies that preferentially include children from low socioeconomic families and actively encourage girls to be physically active
- 4.5 'Life skills' to be embedded in the National Curriculum at all stages of a child's education
- 4.6 Healthcare professionals to promote exclusive breastfeeding until 6 months of age and to give ongoing advice in person to parents about introducing a wide variety of healthy foods including fresh fruit and vegetables to support taste development
- 4.7 Offer counselling for dietary change and increased physical activity in primary health care
- 4.8 Promote physical activity in workplaces via urban planning and support active transport with a focus on increased walking and cycling
- 4.9 Restrict the marketing of food products high in fat, sugar and salt and beverages with high sugar content to children
- 4.10 Reduce total fat content by eliminating trans-fats from processed foods
- 4.11 Regulate food labelling to facilitate consumer knowledge and

encourage increased reformulation of processed foods.

5. ETHNIC/CULTURAL ISSUES AS CONTRIBUTORS TO MATERNAL OBESITY AND COMBATING IT

It is important to define 'ethnicity'. Dimensions of ethnicity could include national identity, colour, citizenship, religion, language, country of birth and culture. Identification with a particular ethnic group might entail a sharing of origins, culture, traditions and social background that are distinctive and maintained between successive generations. (*Gatineau M., and Mathrani S., 2011 'Obesity and Ethnicity.' National Obesity Observatory (NOO), Oxford*). Usually, classification comes from UK Census data whereby people are requested to self indicate to which of 16 ethnic groups they consider that they belong to. The 2001 Census found that by far the largest majority of the UK population is White (92%). The remaining 8% belong to other ethnic groups; the largest being Indian followed by Pakistani, Mixed, Black Caribbean, Black African and Bangladeshi. The remaining minority ethnic groups are classed as 'other' and each account for less than 0.5% of the UK population (*Census 2001. National Report for England and Wales. Office for National Statistics*).

The Centre for Maternal and Child Enquiries (CMACE) has described maternal obesity in the UK as '*arguably the biggest challenge facing maternity services today*' (*Centre for Maternal and Child Enquiries (CMACE) 2010 'Maternal Obesity in the UK: Findings from a National Project*). Those at risk include women from minority ethnic groups in the UK. The Obesity and Ethnicity Report (as above) considered their health to be markedly affected by migration, racism, discrimination, variance in culture and lifestyle, biological susceptibility, poor delivery and take up of health care. As argued beforehand, obesity in the UK is connected to socioeconomic and demographic inequalities and maternal obesity reflects this, especially with regard to deprivation, ethnic group and unemployment (*Bhopal R., 2007 'Ethnicity, Race and Health in Multicultural Societies'*).

Awareness of, and sensitivity to, cultural differentiation are key criteria in the provision of appropriate maternity care for women from minority ethnic communities. Their particular birthing traditions may be fundamentally different and misunderstandings may create fear and anxiety. Interpretation in the relevant language may be limited or absent due to stretched financial resources and the Maternity Alliance has found that at least one fifth of Maternity Units only supply information in English. Added to these issues, differences exist between races and cultures in relation to changing body image during pregnancy (*Harris R., 1979 'Cultural differences in body perception during pregnancy.' British Journal of*

Medical Psychology. 52: 347-352; Morin KH. et al 2002 'Attitudes and perceptions of body image in post partum African American Women. Does weight make a difference?' *MCN American Journal of Maternal Child Nursing* 27(10:20-25).

Also, the Public Health England (PHE) Obesity Knowledge and Intelligence Team recognise that the social gradient in health resulting from inequalities includes ethnicity (NOO, 2011 'Health inequalities – Ethnicity'. *Public Health England Obesity, Knowledge and Intelligence Team*). Health inequalities can be inherited through the generations via maternal influences passed to the baby and child and the health profile for overweight or obese pregnant women from minority ethnic groups with differing history and culture to the main UK population is complex.

The 2004 Health Survey for England (HSE) aside, there is a shortage of nationally representative obesity prevalence data in adults from minority ethnic groups in the UK. Only a handful of qualitative studies have focused on many of the smaller ethnic groups (*The Health Survey for England 2008 'Statistics on Obesity, Physical Activity and Diet – England'. The Information Centre*) and the lack of this general information makes research and commentary on the prevalence of maternal obesity within ethnic groups challenging. The paucity of comparative research in turn results in a lack of differentiation between the data for obesity-related obstetric risks in the general UK population compared to ethnic groups (Heslehurst N. et al 2010, 'A Nationally Representative Study of Maternal Obesity in England UK: trends in incidence and demographic inequalities in 619, 323 births, 1989-2007' *International Journal Obesity*, 34, 420-428).

It is also significant that obesity-related conditions specifically appertaining to ethnic groupings impact the complex picture of maternal obesity risk. For example, hypertension is four times more likely to present in the Black African population and both Black and Chinese populations are at increased risk of stroke. HSE 2004 data demonstrates that (with the exception of the Irish ethnic group) all minority ethnic groups have a higher standardised risk of diabetes. Pakistani women are also five times likelier to have type two diabetes and Bangladeshi and Black Caribbean women are three time likelier to develop a diabetic condition. This pattern is also followed by South Asian and Chinese groups who have an elevated risk of type two diabetes and hypertension even when their BMI is low.

The report 'Storing up Problems: the Medical Case for a Slimmer Nation,' highlighted that the prevalence of obesity in Black Caribbean women was 50% higher than average and among Pakistani women, 25% higher than the norm. In Asian children, obesity is almost four times more common than in White children and this affects teenagers of child-bearing age (*Royal College of Physicians, Royal College of Paediatrics and Child Health, Faculty of Public Health, 2004 'Storing up Problems: The Medical Case for a Slimmer Nation'*). Black African and Black Caribbean women have the highest prevalence of obesity and both Heslehurst et

al and Knight (*Knight M. et al 2010, 'Extreme obesity in pregnancy in the United Kingdom.' Obstetrics and Gynaecology 115:989-997*) observe that Black women were significantly more likely to become obese in pregnancy (BMI > 30) compared to White women. A further issue of concern is the high prevalence of stillbirth in an overweight multi-ethnic population. There is a manifest need for more research to improve this particular interplay between ethnicity, obesity and stillbirth (*Penn N. et al 2014 'Ethnic Variation in Stillbirth Risk and the Role of Maternal Obesity: analysis of routine data from a London maternity unit,' BMC Pregnancy Childbirth Dec 17; 14:404*).

When the WHO Asian-specific BMI was applied, instead of the general population criteria for obesity, there was a two-fold increase in the proportion of South Asian women classified as obese and to make the misclassification of adiposity less likely, more research is needed on the relationship between body shape, fat mass, metabolic markers and ethnicity in adolescents, particularly in girls of child-bearing age. A valuable study here is the 'Health and Behaviour in Teenagers' study (HABITS) a five year longitudinal analysis that found firm evidence for ethnic differences in adiposity with overweight and obesity doubled in Black girls compared to White girls (*Wardle J. et al 2006 'Development of adiposity in adolescence: five year longitudinal study of an ethnically and socioeconomically diverse sample of young people in Britain', British Medical Journal 332 (7550):1130-5*). Similarly, 'The MRC Determinants of Adolescent Well-being and Health Study (DASH) also found that overweight was more prevalent among Black Caribbean and Black African girls with obesity being more prevalent in Black Caribbean girls (*Harding S. et al 2008 'Ethnic differences in overweight and obesity in early adolescence in the MRC DASH study: the role of adolescent and parental lifestyle'. International Journal of Epidemiology 37 (1): 162-172*). This is an obvious concern for the future in the development of maternal obesity amongst women from ethnic groups.

As indicated in the Obesity and Ethnicity Report, there is continuing debate about the validity of applying current definitions of obesity for non-white ethnic groups as they are associated with a variety of different body shapes and different physiological responses to body fat storage. These differences and challenges in relation to body obesity measurement impact upon the challenge of maternal obesity and definition of who is at risk in the population. Baroness Wheeler recently noted:

'The body mass index test simply does not work for some groups and NICE has called for BMI fatness thresholds to be lowered to ensure that up to 8 million people of African, Caribbean and Asian descent in the UK are covered in order to help identify those at risk from diabetes and heart disease' (HL Deb 9 June 2016 Vol 773 Col 192).

The link between ethnicity and maternal obesity is widely recognised but is not straightforward. Public Health England comments that there is mounting evidence of inequalities associated with ethnicity (*NOO, 2011 'Health Inequalities – Ethnicity' Public Health England Obesity Knowledge and Intelligence Team*) PHE noted that a substantial retrospective study among maternity services in England between 1995-2007 found that Black and South East Asian women have a higher incidence of first trimester obesity compared to White women. This was most evident among Pakistani women compared with Bangladeshi and Indian women. They reported that the rate of maternal obesity increased most rapidly for Black women compared with women of all other ethnic groups during this time span. Variance between races and cultures in relations to changing body image were also reported (*POST note No 276 (2007) 'Ethnicity and Health,' Parliamentary Office of Science and Technology*). Pregnancy may also cause an ethnic minority woman to lose confidence in her social acceptability recognising that weight gain in pregnancy can have an effect on social undesirability following pregnancy. The issue is complex and merits more scrutiny and research.

Eating habits between ethnic groups are traditionally healthier than those of the White population, but the rapid adoption of UK unhealthy diets and increased sedentary behaviour are a concern, especially in women of South Asian origin. The issue is further coloured by the fact that members from minority ethnic groups in the UK often have lower socioeconomic status; associated with a greater risk of obesity in both women and children. The PHE NOO report also notes that unfortunately, people from minority ethnic groups may also experience elevated levels of obesity-related stigma.

It is important to observe the effect of the current obesogenic environment on ethnic and cultural issues centred upon maternal obesity. Cultural variation and divergence is maintained by the migration of new groups, but globalisation and the shifting of original cultural practice into new patterns can affect obesity by prompting the shedding of traditional beliefs and behaviours that minimise the risk of overweight and the widespread adoption of beliefs and behaviour that promote obesity. Food type consumption is also altering. First generation Asian and Latino adolescents eat more fruit and vegetables and drink less sugary drinks than US Whites but this rapidly changes by the third generation when their nutrition intake can be even poorer than US White adolescents (*Zilanawala A. et al, 2015 'Race/ethnic disparities in early childhood BMI, Obesity and Overweight in the United Kingdom and United States,' International Journal of Obesity 39,520-529*). This impacts maternal obesity with processed foods displacing traditional diets, fewer home-cooked meals, increased snacking and more fast food on offer. Add to this, the change in patterns of physical activity, with increased sedentary

behaviour and the health benefits of the ethnic group culture are rapidly diminished, leading to a greater risk of maternal obesity.

A further area of cultural adaptation and change with regard to pregnant women – whatever their ethnic group is being constantly assailed with messages about diet and body image. The perceived desirability of ‘size zero’ unsettles women, before, during and after a pregnancy. Body image development occurs in a cultural context, but ethnic groups can differ in their shared understanding as to valued body image and this is particularly apparent in pregnancy e.g. perceived ideal body size for African American women is significantly larger than White women.

According to Heslehurst et al (as above) *‘the relationship between obesity, ethnic group, deprivation and unemployment indicate significant health inequalities in the demographics of those women most likely to be obese in pregnancy’*. There has certainly been an increasing national focus on maternal obesity over the past decade, but there remains an absence of superior evidence for the effectiveness of specific interventions to support women and manage obesity pre-conception, during pregnancy and in the post natal period. The evidence-based data clearly impacts upon the ethnicity and maternal obesity concerns. Attempts to rectify the ethnic-related disparities in obstetric outcome should start with an accurate account of epidemiology. It is crucial that detailed socioeconomic and ethnic data be recorded in a standardised manner in all data sets to improve access to and quality of maternity care, with a firm emphasis on obesity prevalence. The higher rates of obesity-related disease in minority ethnic groups have been highlighted above and they complicate the risk from maternal obesity. These differences need greater understanding and recognition from healthcare professionals and there is a strong case to be made for better education on these matters amongst the ethnic population. Research on the best method of measurement for ethnic minority group women must continue to avoid the ills concurrent on a misdiagnosis of overweight and obesity and the dangers occasioned by a minority ethnic group adopting UK obesogenic nutritional practices alongside a decrease in physical activity must be published so that appropriate maternity interventions can be devised. Unless these matters are addressed with vigour, ethnic minority groups will continue to run risks in pregnancy that are undesirable and will have consequences that may be life long. However, they are certainly avoidable and this should be the aim.

Recommendations

- 5.1 Government-funded research into overweight and obesity in minority ethnic groups and compilation and dissemination of standardised and accessible data
- 5.2 Specific training and regularly updated continual professional

development for medical practitioners and healthcare professionals in issues affecting women from minority ethnic groups in pregnancy majoring on a sensitive understanding of cultural and attitudinal differences being passed on down the generations

- 5.3 Funding to be released for creating a 'pregnancy equality' climate for ethnic groups, including readily available translation and interpretation at all centres delivering maternity services and properly equipping those healthcare professionals who make home visits with appropriately targeted materials
- 5.4 Healthy lifestyle modules in schools to contain clear information appropriate to all ethnic groupings
- 5.5 Further research into appropriate weight measurement method for minority ethnic groups before, during and after a pregnancy.

6. THE ROLE OF ADVERTISING, TRADITIONAL MEDIA AND SOCIAL MEDIA IN PROVIDING POSITIVE MESSAGING FOR WOMEN IN RELATION TO THEIR WEIGHT; ALSO CONSIDERING NEGATIVE MESSAGING, FAT SHAMING ETC.

All types of media, whether traditional or social have a vast influence on how we live our lives, the value judgements we make and what we are encouraged to think is acceptable and unacceptable. The media has a definitive role to play in the health of the nation although relatively little is known about the impact of social media on food choices, health behaviours and weight management (*Chang T., Chopra, V., Zhang, C. and Woolford, S.J., 2013 'The role of social media in online weight management: Systematic review', Journal of medical internet research, 15(11), p.e262*). However, the Office of National Statistics suggests that 63% of adults use social media networking sites each day, thus making them an obvious tool for both advertising and disseminating information to wide audiences (*Office for National Statistics, 2016 'Internet access – households and individuals: 2016': <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/datasets/internetaccesshouseholdsandindividualsreferencetables>*

Pregnancy offers an opportunity for women to make positive changes in their dietary behaviour which will be of lasting benefit to them and their unborn children. Advice and education during this period is usually the preserve of the healthcare professional but pregnant women themselves report that their key sources of information are friends and the family circle, healthcare professionals and the media (*Campbell F., Johnson M., et al, 2011 'Behavioural Interventions for Weight Management in Pregnancy: A Systematic Review of Quantitative and Qualitative Data', BMC Public Health 11, 491*). It is tempting to assume that women

are listening to the healthcare professional at the clinic and then returning home to check the information online.

There are substantial downsides to an undue reliance on social media during pregnancy but tangible opportunities and benefits also. At best, it is a useful device for promoting and disseminating specific health messages to large audiences over time at relatively little expense (*Wakefield, MA., Loken, B. and Hornik, RC., 2010 'Use of mass media campaigns to change health and behaviour', Lancet, 376(9748), pp.1261-1271*) both by influencing an individual's decisions and that of their social network and also by potentially encouraging discussion which may engender campaigns, petitions and thence new policies to promote beneficial change. Social media can aid the healthcare professional who can utilise it to promote health messages, educate the public and also for personal continuing professional development. One study estimated that around 65% of participating doctors used social media for professional purposes (*Househ M., 2013 'The use of social media in healthcare: organisational, clinical and patient perspectives', Stud Health Technol Inform, 183, pp. 244-248*). Public health departments also deploy social media sites such as Facebook and Twitter to promote evidence-based health messaging; the best example being the Government's 'Change-4-Life' initiative which, by the end of 2016 had 94,200 Twitter followers and 354,479 'likes' on Facebook.

Social media can play a constructive role in weight and obesity management by means of apps, online communities and online dietary advice. This is possibly because it surmounts potential barriers such as travel, time and embarrassment by providing 24/7 access and facilitating global conversations that are impersonal (*Office for National Statistics as above*). Yet little is really known about the impact of online weight management, despite the findings of a 2013 systematic review, showing that improved weight outcomes contained a social media element; possibly offering social identification and support for those attempting to reduce their weight (*Chang et al as above*). Analysis of how weight is discussed on various social media channels has found that blogs and forums contain a small volume of posts that are of a supportive nature. They have less stigmatising content and can provide compassionate and non-judgemental spaces for individuals to share weight-related experiences.

Unfortunately, this is countered by some negative aspects occasioned by social media that can have a devastating effect on women with regard to their weight during and after pregnancy. YouTube, for example, depicts strong content on the themes of personal cause and responsibility for obesity with individual-level behaviour change being regularly recommended. However, user-generated videos frequently contain material with a derogatory stance towards overweight people. Unsurprisingly, these attract more viewing, user comments and rating than others

with a gentler approach. Social media serves to reinforce and build upon negative images of overweight and obese people appearing in traditional media (*Chou et al, 2014 'Obesity in social media; a mixed methods analysis', Trans Behav Med4 (3):312-23*). Chou et al in 2014 recognised that social media reinforced existing societal weight stigma online and suggested that overweight individuals (especially women) were frequent targets of weight-oriented cyber bullying. 'Fat jokes' were amongst the most frequently re-tweeted content on Twitter, and Snapchat and Instagram were two of the biggest facilitators for judging appearance amongst teenagers thereby creating new norms and values without equipping users with resilience and wisdom. This unhealthy critical environment is a further potent factor generating worrying negativity in the maternal obesity challenge.

Other problems instigated by social media content have perhaps a more benign purpose but can be destructive in different ways. The number of 'bloggers' 'vloggers' and 'instagrammers' talking and writing about food and nutrition has increased and so has content about weight loss and dieting. Potential for disseminating inaccurate advice by self-proclaimed but unqualified 'experts' is worrying and a study examining the use of Twitter by healthcare professionals found that around half of health and medical-related tweets were not bolstered by accredited evidence. However, tweets supplied by government and physicians were likelier to be evidence-based (*Alnemer, K., Alhuzaim, W., Alnemer, A., Alharbi, B., Bawazir, A., Barayyan, O., and Balaraj, F., 2015 'Are health-related Tweets evidence based? Review and analysis of health-related Tweets on Twitter', Journal of Medical Internet Research 17910, p. e246*). This shows a need to support government and evidence-based practitioners in their use of social media to disseminate accurate information about health to members of the public and patients.

Social media is a relatively new contributor to messaging around weight and is unsurprisingly reflective of the negative framing of obesity in traditional news media. An analysis of 1,925 articles from Swedish newspapers found that obese people were often stigmatised. Overweight individuals were portrayed as ugly, stupid, naïve, irresponsible, lazy, greedy, without manners and repugnant. In addition, excess weight was also presented as a female problem with overweight women being too big and sloppy, sweaty and disgusting. To add to the mix, there is a substantial body of evidence showing that the effects of fat-shaming and stigmatising go far beyond remarks or stares in the street, cutting comments by strangers about a person's body weight and 'amusing' greeting cards featuring overweight people (*Puhl R., and Heur C., 2009 'The Stigmas of Obesity: A Review and Update' Obesity 17, 941-964; UK Health Forum, 2015 'Stigmatisation and Obesity: Literature Review.' Obesity Learning Centre*).

Another major source of weight bias is the ubiquitous advertising of weight-loss products and programmes. The majority of overweight women are portrayed as unhappy and unattractive accompanied by a message that weight-loss is extraordinarily simple and straightforward. This is strongly supported by 'before' and 'after' photographs relating to a famous celebrity or an advertisement for a specific weight-loss product. This misguided view implies by association that the fault lies with the individual and the opinion that they should 'take action and jolly well get it sorted.' Pregnancy with its accompanying weight gain is a vulnerable time to be bombarded with the disturbing tone of some of these media messages. The stigmatising portrayal of obese persons is common in films, internet videos, television shows and commercials. '*Nutty Professor*' films for example, portray the obese family as crude, loud, undignified and unintelligent. Again, the news media generally frames obesity as an issue of personal responsibility and concentrates strongly on individual blame (Kolata G., 2016 '*The Shame of Fat Shaming.*' *The New York Times*, October 1st 2016). Content analysis of news images from national newspapers as opposed to local papers, conclude that the majority of images depict obese persons in a negative and stigmatising manner and rarely represent them in a positive light (Hilbert A. and Ried J., 2009 '*Obesity in Print: An Analysis of Daily Newspapers,*' *Obesity Facts*, 2,46-51). Local papers appear less critical, but perhaps this is because they may know the individual personally. Critical images alone communicate prejudice and influence public perception regardless of the content of the news stories accompanying the images. The overweight, pregnant woman watching these films and reading the newspaper requires a considerable supply of resilience to put such imagery to one side and focus on her pregnancy in a positive manner.

After the birth, media messaging focuses on the view that the overwhelming imperative, indeed moral responsibility is the retrieval of the pre-pregnant body. Susie Orbach and Holli Rubin in their paper '*Two for the Price of One – the impact of body image during pregnancy and after birth,*' highlight the media images that shower praise upon celebrity mothers who achieve a state of emaciation six weeks after delivery. Clearly the focus is being switched from the mother and baby getting to know each other, and instead, there is a cultural insinuation that a mother's real job is to present herself physically as though nothing like having a baby has occurred. The critical moment in which a new life and a new mother weave together a delicate and precious bond needs supporting without dieting pressure, in order to ensure the best outcomes for both (Orbach S. and Rubin H., 2014, '*Two for the Price of One: The impact of body image during pregnancy and after birth*': <http://www.gov.uk/government/publications/two-for-the-price-of-one>) Pregnancy has only a short window available for habit formation and there needs to be a greater emphasis on a supportive media environment.

When questioned, individuals prefer positive imagery and feel angry about stigmatising images. As women appear to be judged more critically than men concerning their weight, the pregnant woman with weight issues is more likely to be a target of abuse and derision. Presenting pregnancy and appropriate weight gain in a positive light may avoid the tendency to binge eat, put off physical activity and fall prey to deleterious health consequences; hopefully generating a greater interest in healthy lifestyles before, during and after a pregnancy. The focus should be on the pregnancy and birth not an obsession with weight, and the creation of a positive and supportive environment for those with maternal obesity requires immediate attention and creative action by the media. However, much more research is required in this area in conjunction with improved quantitative and qualitative measurement of the media influence on the pregnant overweight woman. Monitoring of media and advertising with accountability for weight-based stigma needs greater documentation.

According to Pearl 'A significant first step would be for news and popular media to pledge against perpetuating negative stereotypes and use more positive images. This could have a substantial impact as the road to weight control should be running directly through shame and humiliation.' (Pearl R. et al, 2012 'Positive Media Portrayals of Obese Persons: Impact on Attitudes and Image Preferences', *Health Psychology*, 31(6):821). Weight is a matter of health – it is not a measure of morality.

Recommendations

- 6.1 More research into the effects and influence of all media upon the pregnant woman as part of the public health agenda
- 6.2 An embracement of diversity and avoidance of stereotypes; descriptions and portrayals of overweight pregnant women should not imply negative assumptions about their character, intelligence, abilities and lifestyle habits
- 6.3 The use of appropriate language and terminology, avoiding potentially pejorative adjectives or adverbs when describing obese/overweight pregnant women should be endorsed in all media and particularly social media and Twitter
- 6.4 Coverage of obesity to be balanced and accurate with a requirement for the media to be fair and accurate in reporting issues relating to body weight gain. News stories and articles on maternal obesity should be grounded in scientific findings and evidence-based research with all funding sources cited
- 6.5 Less concentration upon individual 'responsibility' as this may encourage societal, biological and environmental contributors to obesity in pregnancy to be neglected

- 6.6 Appropriate pictures and images of individuals affected by obesity should be used that do not contribute to the depersonalisation and stigmatisation of the individual with maternal obesity
- 6.7 Positive media portrayals of obese pregnant women need to be employed instead of using such images merely for the purpose of humour and ridicule
- 6.8 A more constructive use of pregnant celebrities by social and traditional media with a concentration upon healthy pregnancy lifestyle rather than the race to get back into skinny jeans after the birth
- 6.9 Government evidence-based research and medical practitioner advice to be presented on social media in an accessible and informative manner; thereby lessening the influence of the self proclaimed 'expert' but unqualified lay person.

7. NATIONAL AND INTERNATIONAL BEST PRACTICE; WHAT LESSONS ARE TO BE LEARNED?

Attitudes and medical practices with regard to weight gain in pregnancy vary from country to country and although this is not the place for a comprehensive study (which is not to say that such a work is unnecessary) it is useful to examine some here. Mary Brighton, MS, RD, a registered dietician nutritionist in America, France and the United Kingdom: mbrightonon@brightononyourhealth.com has written about the pattern in France whereby in contrast to the UK, obstetricians strictly moderate a woman's pregnancy weight gain at each month's pregnancy check-up. She qualifies the assertion by saying that not all do so, but it is certainly the majority procedure. Whilst the importance of regularly monitoring weight gain in pregnancy cannot be overemphasised, it is crucially important, as the Royal College of Midwives and Slimming World have argued, that this is done in a sensitive, appropriate and considerate fashion, rather than in the manner experienced by two French women, quoted in translation by Mary Brighton (*Brighton Your Health as above*):

'What pregnant woman hasn't heard that they must gain one kilo each month during their pregnancy and not one kilo more? And if they gained too much weight, their baby will be too fat? Or that you must quickly lose weight right after delivering, or you may never find your former body? These false ideas that make future mothers guilty. They sometimes transform the pregnancy into a real 'chase' of kilos.' (Anne-Laure Vaineau).

Similarly, according to psychologist and nutritionist, Laurence Haurat:

'(French) pregnant women are now put under a real pressure with the control of their weight gain. Like if the pregnancy was a parenthesis that isolates this from the rest of their life. For French women, this pressure to gain one kilogram a month (and no more) equals out to about a 10 kilogram total weight gain for a French woman's pregnancy....for some women, this perfect (and strict) weight gain is just not enough to support a healthy pregnancy and healthy eating habits because some women don't gain enough weight, or restrict their eating habits too much to keep within their doctor's weight goals.'

The doctor's 'help' can all too often slip into off-putting hectoring.

Guardian writer, Kate Carter (*Expecting answers. What advice are pregnant women around the world given? Friday 31st October 2008*) mused about nutritional advice given in the UK to the pregnant woman and concluded that the scenario resembled a type of lottery with advice given on drinking and eating *'often seems (to be) out of date, sometimes downright incomprehensible and also, it varies wildly from doctor to doctor.'* She wondered if this was the case from country to country and invited readers to make contact with their own international pregnancy stories. The subsequent responses demonstrated that her use of the world 'wild' to characterise advice variation in the UK was also applicable to practice in other countries.

In Scotland, for example, pregnant women were advised to avoid tap water whilst in Spain copious amounts of 'café con leche' were advocated in order to raise a low blood pressure. Norway practitioners were relatively relaxed, with an approach that most foods in moderation would be safe and a common instruction was for pregnant women to avoid poring over UK and USA pregnancy sites. Germany appeared to take a critical attitude towards vegetarians with some physicians actually advocating a switch to a meat-based diet and Italian doctors recommended that a small daily glass of red wine 'for the blood' was a good idea. They also stressed that it was best to avoid raw vegetables in restaurants and that a daily ration of five cigarettes a day was preferable to 'the stress of giving up.' American doctors banned the consumption of sushi (not the case in Japan, naturally) but in Japan, the general tenor of advice seemed to deviate from everywhere else; Japanese doctors recommending weight loss and rigid control throughout with no weight gain whatsoever, on the grounds that birth would then be easier. With the exception perhaps, of practice in Norway, there is nothing here to reassure women that they are doing the best for themselves and their babies whilst pregnant and it is unsurprising if women worldwide complete a pregnancy feeling anxious and confused.

A report from the Centres for Disease Control and Prevention in America (*'Morbidity and Mortality Weekly Report MMWR Gestational Weight Gain – United*

States', 2012 and 2013) examined state-specific data on gestational weight gain (GWG) using the 2003 revised birth certificate which collects maternal height, pregnancy weight and delivery weight. In addition, 2012 data from the Pregnancy Risk Assessment Monitoring System (PRAMS) were analysed to estimate prevalence of inadequate, appropriate or excessive GWG in five states with available data that had not yet adopted the 2003 birth certificate. The American College of Obstetricians and Gynaecologists recommends that clinicians calculate a woman's pregnancy BMI at the first prenatal care visit, educate her on the importance of appropriate GWG goals and offer advice on dietary and physical activity procedures to achieve them. It is further recommended that education, counselling and monitoring GWG is ongoing throughout pregnancy (*American College of Obstetricians and Gynaecologists, ACOG Committee opinion no.548: weight gain during pregnancy. Obstet Gynecol 2013; 121:210-2*).

The report's findings are limited in at least three ways. Firstly, data on weight from the 2003 birth certificate update were derived from medical records or self-reported and weight data from the PRAMS survey were obtained about 4 months postpartum – leading to the possibility that pre-pregnancy BMI or GWG might be misclassified. Also, analyses were confined to full-term pregnancies resulting in singletons and therefore outcomes might not apply to all pregnancies. Thirdly, with a lack of nationally (as opposed to state) representative data, two data sources with different sampling and variable ascertainment methodologies were used and this could colour some state-to-state comparisons and the actual overall results. Yet comparison of GWG using only birth certificate data from the current analysis with an analysis of the PRAMS data from 28 states (*Deputy, NP., Sharma, AJ., Kim SY., Hinkle, SN. 'Prevalence and characteristics associated with gestational weight gain adequacy.' Obstet Gynecol 2015; 125:773-81*) found nearly identical inadequate, appropriate and excessive GWG prevalence estimates, suggesting that the two data sources are comparable in their aggregate prevalence estimates.

The findings were that less than one third of women had GWG within IOM recommendations. The high prevalence of excessive GWG, which varies state by state and pre-pregnancy BMI, is a matter for concern because of the health risks prompted by GWG. The study concluded that to optimise maternal and child health, intensified, multifaceted strategies should be developed in order to increase the proportion of women who achieve appropriate GWG. The point needs to be made that these should be nationally advocated strategies rather than left to the whim of individual states.

Following on from a ground-breaking report by the Prime Minister's Chief Science Advisor, which stated:

'The metabolic compromise in offspring of obese mothers may already be present in fetal life and that a compromised early start to life is associated with increased risk of obesity and metabolic dysfunction in adulthood' ('Improving the Transition' 2011) in 2014, the Ministry of Health in New Zealand issued a National Guidance document for the use of health practitioners when monitoring a pregnancy and it is instructive to examine some of the recommendations (*Guidance for Healthy Weight Gain in Pregnancy, Ministry of Health, June 2014:*

www.health.govt.nz/your-health/healthy-living/pregnancy

The document includes 'practice points' for pre-pregnancy, during pregnancy and post pregnancy. Pre-pregnancy, the Ministry of Health recommends that all women of childbearing age should have their weight and height measured and documented and BMI calculated as part of routine pre-pregnancy practice with consequent advice given that is consistent with Weight Management Guidelines for Adults (Appendix 1 contains a comprehensive list of useful resources such as an Online Learning Tool and Appendix 2 contains an algorithm for weight management in non-pregnant women). The advice states that women should be weighed and measured wearing light clothing, standing erect with shoes off. Practitioners are advised to develop relationships with patients that empower the women through respect and trust, enabling them to understand and acknowledge their life situations including social determinants, cultural imperatives and socioeconomic circumstances. The practitioner should:

- Assess the clinical needs of the woman
- Identify opportunities with the women to address their clinical needs
- Identify with the woman options for actions that are realistic for them
- Maintain appropriate contact and support.

During pregnancy, the guidance states that height and weight should be measured at the booking or first visit and clarifies that '*it is not sufficient to use self-reported measures of height and weight.*' The practice points concentrate on weight gain and urge that:

- Health practitioners should advise all pregnant women on recommended weight gain according to the 2009 IOM guidelines
- BMI is calculated from measured height and measured weight at booking/first visit (ideally before 10 weeks' gestation) by the referring GP or the Lead Maternity Carer (LMC). If the woman presents after 10 weeks' gestation, the BMI can still be calculated from measured height and weight and weight gain can still be advised based on best estimate of pre-pregnancy BMI
- Women be encouraged, where appropriate, to monitor (using the same scales each time) and record their own weight regularly (for example, monthly) during pregnancy and in the postpartum period and bring a copy of this information to antenatal visits for discussion as part of their care plan. If this is not feasible, then they should be weighed at antenatal visits

- Direct dieting is not recommended.

The guidance stresses that excessive GWG and/or postpartum weight retention can lead to an increased BMI for subsequent pregnancies. Practice points recommend that the healthcare professional:

- Discuss healthy eating, physical activity and breastfeeding as strategies for encouraging a return to pre-pregnancy weight with all postpartum women. Opportunities for this include during antenatal visits and routine postnatal checks
- Advise women who are overweight or obese of the benefits of weight-loss pre-pregnancy and between pregnancies and take action consistent with the Weight Management Guidelines for Adults
- Women who are a healthy weight should be encouraged to maintain it between pregnancies.

There is also guidance on healthy eating habits and physical activity.

The issue of maternal obesity and its effects has also been raised in the European Parliament. Citing a report of the Karolinska Institute which had been published in the Journal of the American Medical Association (*'Maternal obesity and risk of preterm delivery'* 2013), Nuno Melo PPE noted that *'According to the researchers involved, maternal obesity has replaced smoking as one of the main causes of adverse pregnancy outcomes.'* The MEP asked whether the Commission was aware of the study and if the Commission had produced any similar comparative studies between member states (E-007374/13.OJC 55E 26.2.2014). Confirming its awareness of the report, the Commission stated:

1. *'The Commission has funded the recently published European Perinatal Health Report which assesses the health and care of pregnant women and babies in Europe in 2010. According to the report, the rate of preterm births remained stable from 2004 to 2010 in many countries; the preterm birth rate for live births varied in 2010 from about 5% to 10% in Europe'*
2. *'The need to focus on pregnant women is a priority in the strategy for Europe on nutrition, overweight and obesity related health issues. In addition, the Commission has launched pilot projects aimed at promoting healthy diets and increasing consumption of fresh fruit and vegetables amongst pregnant women.'*

The Commission has also funded two Perinatal Health Reports, both produced by the Euro-Peristat Network; *'Better Statistics for Better Health of Pregnant Women and Their Babies'*, 2004 and *'Health and care of pregnant women and babies in Europe'*, 2010. The first report included obesity alongside the use of recreational

drugs, alcohol and smoking as a risk factor for congenital abnormality, stating that any strategy to tackle these health determinants should pay special attention to women of childbearing age because the damage is often done very early – even before a pregnancy is recognised. Policies aimed at ensuring ‘healthy pregnancy’ or good perinatal outcomes include congenital anomalies as part of a range of outcomes including foetal and infant mortality, birth weight and neuro developmental issues. The report added that a system of pre- and peri-conceptual care was needed for congenital anomalies. The second report found that *‘More than 1 in 10 pregnant women are obese in countries with data, but many countries do not monitor this indicator.’* It also noted that obese women accounted for 20.7% (Scotland) of all pregnant women but England, Wales and Northern Ireland did not submit data concerning the distribution of maternal pre-pregnancy body mass index (BMI) in 2010.

Other work funded by the European Union Commission includes cohort research published by the DORIAN Consortium with findings of marked elevations of poorer health outcomes as a result of maternal obesity. Professors Rebecca Reynolds and Megan Holmes at the University of Edinburgh noted that obese women consumed more saturated fats and less micronutrients during pregnancy than lean women; the outcome being that there was less protection in the placenta against the stress hormone cortisol. This has been linked to a high prevalence of mental health conditions including mood disorders (*Development Origins of Healthy and Unhealthy Ageing: The Role of Maternal Obesity – Introduction to DORIAN, Karger 2015*). The findings have been reported to the BMJ.

In conclusion, it cannot be said that there is an international lack of awareness about the very strong risks to mother and baby of overweight and obesity during pregnancy. On the contrary, there is much research pointing to the disadvantageous consequences for the life course of both. What there is not, however, is any type of consensus about what to do about it and the quality of advice given to women before, during and after pregnancy is dependent upon which country they happen to be in at the time. Women in New Zealand, for example, might justifiably consider that they had won the pregnancy care lottery; for women undergoing the experience in some other countries, the advice available to them might feel more closely aligned to pot luck.

There is an urgent need to collate best practice – not least on nutrition. The United Nations Convention on The Rights of the Child was an important landmark in establishing international principles concerning what a child has the right to expect to ensure its wellbeing and future life chances. There is a need for something of a similar nature in relation to the experience of pregnancy.

Recommendations

- 7.1 Reputable international body such as The World Health Organisation (WHO) to collate best practice in the care of pre-pregnant, pregnant and post partum women with the aim of establishing a 'Maternal Charter' similar to the UN Convention on the Rights of the Child
- 7.2 National governments to be encouraged to record data about maternal obesity so that the extent of the problem can be dealt with and progress ascertained in achieving 'healthy outcome' goals.

8. MATERNAL OBESITY PRACTICE IN THE DEVOLVED UK COUNTRIES

The monitoring and management of women's weight during pregnancy in the devolved governments of the UK is of an uneven quality. The most unsatisfactory scenario is that in Wales where a 2013 report noted that:

'42% of women of childbearing age (ages 16-44 years) are overweight or obese. Wales has the highest overall prevalence of severe maternal obesity (BMI 35 or over) in the UK at 6.5%. only 55% of women with a BMI of 35 or over give birth naturally, with a caesarean rate 1.5 times higher than the rate in the general maternal population' (Maternal Obesity Report Reproductive and Early Years Pathfinder Project, Public Health Wales, 2013).

In 2014, the National Assembly for Wales Children, Young People and Education Committee Inquiry into Childhood Obesity developed the theme, finding that maternal obesity was higher in Wales than in any other UK country with lower rates of initiation and continuation of breastfeeding compared to other areas. Gaps in current provision requiring immediate attention were identified as tackling maternal obesity, promotion of breastfeeding and support for programmes targeting women before, during and after pregnancy. The Betsi Cadwaladr University Health Board considered that the Change4Life programme could be utilised to address these issues via an increased focus on the promotion of nutrition and physical activity messages for pregnancy, including preconception. In written evidence, Public Health Wales called for a national pathway for maternal obesity to be introduced across Local Health Boards (*18 17 Oral evidence, 15.1.14. 18 Written evidence, CO22.20*).

Public Health Wales further identified other defining issues with regard to maternal obesity highlighting that individuals living in socioeconomically deprived areas were likelier to be obese and less likely to have healthy eating patterns than their counterparts residing in less deprived areas. Cardiff and Vale University

Health Board signposted the matter of food poverty and its effect upon nutrition, commenting:

'The inability to afford, or have access to, food to make up a healthy diet is a barrier to reducing childhood obesity in Wales.'

Evidence showed that for many people, including families with children there is a perceptible gap between available income and the actual cost of securing a nutritious diet. The Defra Family Food survey contained the finding that affordability for a nutritious diet had worsened between 2007 and 2011. More income was spent on food by poorer households and they may select highly processed and high fat foods or poor nutritional quality foods in order to save money. In oral evidence, the Welsh Assembly Minister confirmed that Change-4-Life had failed to achieve its full potential and that more could, and should, be done in future. Families who had participated in the scheme had, however, responded positively, with three quarters reporting that Change-4-Life had resulted in positive behavioural changes. The Minister accepted that a disadvantage of Change4life (in common with many similar programmes) is that it is more accessible to people *'whose general circumstances are not at the sharpest end of difficulty and disadvantage'* (20). In terms of the affordability of healthy food, the Chief Medical Officer said that this (and comparative schemes) was designed in a way *'that is very mindful of not putting pressure on families to spend resources that they do not have'* (21 63.) Making reference to maternal obesity, the Chief Medical Officer said that maternal weight was being examined as part of the Maternity Services in Wales programme, led by the Chief Nursing Officer. She commented that there was scope to further develop any practice guidance that was relevant (*Children, Young People and Education Committee 'Inquiry into Childhood Obesity' 2014*).

In the case of Northern Ireland, the core policy is contained in *'A Fitter Future for all – framework for preventing and addressing overweight and obesity in Northern Ireland' Department of Health (2012-22)*. The report has been updated recently in the form of *'A Fitter Future for All' – outcome framework, Department of Health 92015 -19*.

Its recommendations are that people attempting to conceive and expectant parents should receive continuous advice on nutrition and appropriate levels of physical activity and that pregnant women who present as overweight or obese must have access to evidence-based weight management interventions during their pregnancy and into the post natal period. The recommendations are not confined to advocacy in medical settings and provide information tailored to employers and employees to promote the provision of supportive environments for breastfeeding; further proposing a public consultation with regard to the

introduction of legislation to support mothers breastfeeding their infants in public places.

With regard to nutrition, the report advocated new regulations, to be developed by 2015 on foods for specific groups, including foods intended for infants and young children and instructed child care facilities to comply with *'Nutrition Matters for the Early Years'*, monitored by Early Years teams. An essential requirement for the registration of child carers was to undertake training in *'Nutrition Matters in the Early Years.'* There is a useful concentration upon the early years as a foundation for a healthy life course, including evaluated programmes in place to increase the practical food skills, awareness and knowledge of parents/carers to enable them to make healthy choices for themselves and their children. Similarly, the report advocated that all early years settings should provide a supportive environment for young children to achieve the Chief Medical Officer's recommended levels of physical activity and in conjunction, training should be delivered to support the interpretation of the early years section of *'Start Active, Stay Active'* guidelines for those who work in these settings, especially via *'Early Movers'* and *'Start to Play'* training.

There is also a policy document called *'Healthy Child, Healthy Future.'*

The Scottish Parliament has perhaps been responsible for the most pro-active stance on maternity services and has been taking policy and legislative steps towards dealing with the problem of maternal obesity. Funding is being allocated to NHS Boards to:

- Increase the uptake of *'Healthy Start'*
- Support delivery of the *'HEAT'* target on breastfeeding
- Invest in specialist nutritional services
- Support delivery of existing programmes
- Enable existing training for anyone involved in interventions with the target group to be taken up.

(CEL 36, 2008 Executive Order, 'Nutrition of women of childbearing age, pregnant women and children under five in disadvantaged areas: funding allocation 2008-2011').

Further initiatives are presented in *'Scottish Government Improving Maternal and Infant Nutrition: A Framework for Action 2011'* and advise that national occupational standards on maternal and infant nutrition will be developed and that the healthcare/education defined workforce must benefit from preparation programmes in evidence-based training on maternal and infant nutrition including nutrition prior to conception, during and after pregnancy, appropriate nutritional supplementation, breastfeeding, infant formula feeding, complementary feeding

and transition to a family diet. Healthcare/education professionals must also accept the responsibility to update their skills via continual professional development (CPD) on maternal and infant nutrition relevant to their scope of practice.

The Executive Order also resolves to develop a national training resource on maternal and infant nutrition to include behaviour change models capable of adaptation according to scope of practice and used for local CPD and states that healthcare, education and social care managers must promote positive attitudes and challenge negative approaches toward maternal and infant nutrition. This can be done by relying upon a range of methods including health behaviour change and skills and attitudes training. In addition, training opportunities will be made available to enable the defined workforce to engage more constructively with disadvantaged groups. The learning resource *'Bridging the Gap'* should be used for such CPD training and be integrated into under and postgraduate education programmes. A comprehensive approach to this policy area is also seen by the fact that sexual health and reproductive education for sexual health staff should include the influence of nutrition upon reproductive health.

Maternal History taking, as outlined (*'NHS QIS Best Practice Statement on Maternal History Taking, 2008'* and *'Scottish Woman-Held Maternity Record', SWHMR, 2008*) must include a basic diet history including nutritional supplementation, BMI and where appropriate, onward referral to specialist services (e.g. obstetrics, dietetics etc) and nutrition prior to pregnancy, during pregnancy and infant feeding will be included in *'Curriculum for Excellence'* and suitable resources developed and identified for teachers. In addition, all childcare providers (including childminders) who offer food are required to provide appropriate healthy food and drinks for young children and babies over the age of six months.

The Framework states that antenatal education will be made available to all women and their significant others (such as partner, mother/mother-in-law) proportionate to need and include accessible, relevant and non-judgemental practical support and information on maternal and infant nutrition. Such education may include parental education classes, infant feeding workshops, nutrition resources in a variety of formats and signposting to locally provided practical food sessions. So that all women may be reached, services must be designed that are inclusive and responsive to those with extra needs who are hard to reach such as young parents, parents with learning difficulties, parents from minority ethnic groups and those living in areas of social deprivation.

Finally, the Framework proposes a positive media strategy with consistent lines and messages designed to combat myths and misinformation about maternal and

infant nutrition and the development of communication channels to support and enable health professionals to interpret and respond to reports on maternal and infant nutrition appropriately.

Research is also available in Scotland about the economic consequences on weight levels in maternity (*'Maternal Obesity is Independently Associated with Increased Antenatal Admissions and Health Service Costs: Population Based Study'*, Health Economics Research Unit, Aberdeen 2014). The study found that maternity admission costs, for women with high or low BMI were higher when compared to those for women of normal BMI. Following adjustment for socio demographic characteristics and parity, the estimated additional costs were £91.40 for underweight women, £149.97 for overweight women, £399.08 for obese women and £754.93 for severely obese women. When compared to women of normal weight, all other BMI categories were associated with an increase in the duration and number of maternal hospital admissions required during and after pregnancy. Underweight women had an 8% increased risk of admission, while overweight, obese and severely obese women's relative increased risk was substantially greater: 16%, 45% and 88% respectively. The estimated relative increase in duration of stay (per admission) was 4%, 8% and 125 for overweight and severely obese women respectively.

From a comparison of provision available in the devolved countries of the UK, it can be seen that only in Scotland are women and their children offered a truly comprehensive service with benign influence that appertains throughout the life course and not the nine short months of pregnancy alone. A similarly holistic approach should be deployed UK-wide to the benefit of all societies, communities and socioeconomic groupings as the outcomes will of course have beneficial economic as well as health-related effects.

Recommendation

- 8.1 UK Government to conduct a comparative study of pre-pregnancy, pregnancy and post pregnancy practice, advice and provision in all the devolved UK countries with the aim of producing standardised programmes that offer an inclusive service for all women and children regardless of their family, demographic and socioeconomic circumstances.

9. EXAMPLES OF RELEVANT RESEARCH AND CASE STUDIES GIVING EXAMPLES OF SUCCESSFUL INTERVENTIONS

As the content of this report has shown, despite an increasing societal awareness of the life long adverse consequences of obesity in pregnancy, there is a lack of consensus on which strategies to adopt to combat it. This should now be addressed by policy makers as of urgency. However, there are examples of good practice in existence throughout the UK, together with relevant research models and in conclusion it is useful to describe some of them.

The Early Start Wellbeing and Nutrition Team; London Borough of Newham:
<https://www.earlystartgroup.com/home/early-start-wellbeing-and-nutrition>

The Newham Registered Nutritionist for the Wellbeing and Nutrition team offers a range of Healthy Eating in Pregnancy group sessions to families attending antenatal classes. Registered Nutritionists discuss maternal diet and nutrient requirements for the expectant mother and foetus based on the Eatwell Guide. The importance of iron, iodine, omega 3, fatty acids and additional supplement requirements for folic acid during the first trimester and vitamin D throughout the pregnancy are highlighted – also food safety. The team also delivers sessions for those planning a pregnancy/early stages of pregnancy and during 2015-16 groups were pre- and post-evaluated to assess changes in knowledge as a result of attending the group. The groups support parents in understanding the nature of a healthy diet and providing practical tips on how to implement change.

Healthy Start

The Healthy Start scheme is an essential tool for health visitors and midwives. It is a UK-wide government initiative designed to improve the health of low-income pregnant women and families with young children who are on benefits and are recipients of tax credits. The aim is to provide pregnant women and their families encouragement, information and advice on healthy eating, breastfeeding and vitamin supplements. Those who qualify for the scheme receive free vouchers each week to spend on milk, plain fresh and frozen fruit and vegetables, infant formula milk and free vitamins: <https://www.healthystart.nhs.uk/>

The Edinburgh Antenatal Metabolic Clinic: personalised care of severely obese pregnant women at a specialist antenatal metabolic clinic 2008-2015.

This specialised multidisciplinary antenatal clinic was established with the help of the charity Tommy's in 2008 and has now cared for over 1,000 severely obese women throughout their pregnancies. The care includes frequent and regular monitoring of mother and baby, personalised advice about healthy eating, dietary

and lifestyle advice and education about the possible risks of obesity in pregnancy. An investigatory team monitors women attending the clinic, charting their weight gain, change of body composition during pregnancy and analysing the effects on the baby. The team have to date published findings from the work comparing the outcomes of pregnancy in approximately 510 women who attended the clinic with those of 494 women who received standard antenatal care. Those who attended the clinic had better clinical outcomes than those who did not and the recipients of specialist care were eight times less likely to have a stillbirth. The rate of stillbirths was 2% per 1,000 deliveries (9 less than half the rate for Scotland overall) and less than a third of the Scottish average for severely obese women. Women attending the clinic were also less likely to have a baby of low birth weight (less than 2.5 kg). Women clinic attendees were likelier to be tested for diabetes. The babies of almost 200 of extremely obese women were followed up; these babies were born significantly heavier and shorter than the babies of normal weight women. These babies were still significantly heavier at 6 months of age and the Edinburgh clinic team are now assessing the growth of these children (now aged between 3 and 7 years) and the development of obesity and possible metabolic problems. The implication for policy of this research is that personalised advice and care of severely obese women in pregnancy can improve clinical outcomes and reduce the risk: Jbrewin@tommy's.org

'Healthy Conversation Skills' pilot for Health Education Wessex: 'Making Every Contact Count' (MECC). Medical Research Council Life Course Epidemiology Unit, University of Southampton: wtl@mrc.soton.ac.uk

As part of a pilot scheme to explore the feasibility of using HCS to deliver Health Education, Wessex 'Making Every Conversation Count' (MECC) multidisciplinary staff from GP practices in Hampshire and Buckinghamshire were offered HCS training as part of continuing professional development (CPD). Evaluation explored the experiences and competency levels of practitioners using HCS following training, and to evaluate the feasibility of these skills to be embedded into routine practice. Observations and reflective interviews were conducted at the practitioner's workplace at two time points following HCS training, the first being at 1-2 months post training and the second at 11-13 months post-training in order to measure long-term use of the skills.

Practitioners were observed during routine practice to assess the use made of the skills and each observation lasted 1-3 hours. Observers recorded the use of three of the four HCS (asking Open Discovery Questions, Listening and Supporting SMARTER Goal-Setting) using a standard proforma. Following the observations face-to-face reflective interview with the practitioner was undertaken with four themes merging:

1. Perceived value of the training

2. Reflecting on using HCS in current practice
3. Identification of barriers and facilitators to using HCS
4. Identification of areas for improvement in using HCS.

The findings of this study have implications for those wishing to advance the public health agenda by encouraging patient self-management in primary care. It established that primary care practitioners with ranging levels of job responsibility can receive training in practical skills to support behaviour change and that over a one year period, changes to their routine practice appear to become embedded. As a consequence of the pilot, Health Education Wessex has now adopted HCS as their approach to MECC, with the train-the-trainer model encouraging sustainability across the region. This method of workforce development can provide a consistent, empowering, patient-centred approach every time an individual comes into contact with a front-line practitioner. This has the potential to support people to take first steps towards better health and thus lead to population-wide improvements in health and wellbeing. As an individual quoted in the study says:

'It's like a light bulb moment and you know something has clicked for them... that's the encouragement to keep on doing something that's a bit difficult.'

Ten Steps for a Healthy Pregnancy (Infant and toddler Forum, March 2016)

Supported by the National Obesity Forum, the Association for Nutrition and the Pre-school Learning Alliance, this online resource may be accessed by mothers themselves or used as a guide by healthcare professionals during routine visits. To address the difficulties that professionals may experience when raising 'awkward' lifestyle questions to patient and to encourage wider use of 10 Steps, The Infant and Toddler Forum (ITF) combined with the MRC Life Course Epidemiology Unit at the University of Southampton (as above). The aim was to develop a training course for HCPs to assist them in engaging with patients. It was agreed that the course should be accessible and that it should ideally fit into a single morning or afternoon training session.

Part One of the courses explained the rationale and evidence behind each of the Steps by means of quizzes and practical examples and Part Two provided an introduction to 'Healthy Conversation Skills' as developed by Dr Wendy Lawrence (above).

The HCS programme has now been incorporated into the University of Southampton's Masters degrees in Diabetes Best Practice, Health Psychology and Midwifery and the training has also been delivered as a component of Workforce Development and Research programmes in New Zealand, Australia, Canada and

South Africa to support improvements in public health. This valued training course in 'Healthy Conversation Skills' can support healthcare professionals to engage with women and empower them to make lifestyle changes in line with current recommendations that may have a significant impact on maternal obesity, particularly amongst disenfranchised and hard to reach groups.

BORN IN BRADFORD AND OTHER STUDIES RELATING TO ETHNICALLY DIVERSE GROUPS

As stated earlier, underpinning ethical and cultural issues can have their own roles to play in contributing to the epidemic of maternal obesity and the risks of excessive weight gain has been found to be less clear amongst a sample of ethnically diverse new mothers (*Groth SW & Kearney MH, 2009 'Diverse women's beliefs about weight gain in pregnancy', Midwifery Women's Health 54(6):452-7*). The Born in Bradford (BiB) study is a long-term survey comprised of 13,500 children who were born at Bradford Royal Infirmary between March 2007 and December 2010. In this 'birth cohort', health has been tracked from pregnancy, through childhood and into adult life. Findings from the study provided valuable insights into risk factors for obesity during pregnancy:

<http://www.bradfordresearch.nhs.uk/research-teams/born-in-bradford>.

It has been noted by the Rt Rev. the Lord Bishop of Bradford that Bradford '*has a higher rate of obesity among children than the national average and standards of healthy eating and physical exercise are among the lowest in the country*' (*HL Deb 7 Jan 2010 Vol 71L Col 254*). Unfortunately, this still appears to be case:

'In Year 6, 22.3% (1,330) of children are classified as obese, worse than the average for England' (Public Health England, Bradford Public Health Observations 2015).

A sub-study of the BiB birth cohort showed that compared to Pakistani mothers, White British mothers were likelier to have a higher body mass index (BMI) and breastfeed for a shorter period whilst Pakistani mothers had a higher rate of gestational diabetes and were less active. Obesity as previously stated, can also affect pregnancy outcomes, including the risk of stillbirth. An analysis of 53,293 births that took place in a London teaching hospital showed that compared to White women, Non-White ethnicity doubled the risk of stillbirth. Obesity was also a particularly strong risk factor for stillbirth amongst women of South Asian ethnicity (*Penn Net al, 2014 'Ethnic variation in stillbirth risk and the role of maternal obesity: analysis of routine data from a London maternity unit,' BMC Pregnancy Childbirth 14:404*).

Other work has shown that maternal obesity is a risk factor for prematurity in White/Non-Hispanic, Asian and Hispanic populations, but not in Black/Non-

Hispanic populations (*de Jongh BE, 2014 'Effects of pre pregnancy obesity, race/ethnicity and prematurity' Matern Child Health J 18(3):511-7*) whilst earlier research has shown that ethnicity modifies the effect of insulin resistance in pregnancy. Pre-pregnancy BMI was found to have a greater effect on levels of insulin resistance in pregnancy in Asian women compared with Caucasians (*Retnakaran Ret al, 2006 'Ethnicity modifies the effect of obesity on insulin resistance in pregnancy; a comparison of Asian, South Asian and Caucasian women', J Cli Endocrinol Metab 91(1):93-7*).

It is clear that more research is needed to study how ethnicity may be associated with gestational weight gain and obesity in pregnancy. It is possible that it has 'levelled out' now with acculturation having a role to play in this. However, misconceptions about pregnancy do appear to be ingrained in some cultures, with a case of 'the more the better' emerging in some instances (*Keely A. et al, 2016 'If she wants to eat.. and eat and eat... fine! It's gonna feed the baby', Pregnant women and partners' perceptions and experiences of pregnancy with a BMI >40kg/m²'. Midwifery pii: S0266-6138(16)30170-X*).

The above list of research papers and case studies relating to obesity and weight management in pre-pregnancy, pregnancy and during the postnatal period is not exhaustive but serves to cover some of the main issues that have been considered. Some studies are ongoing and it is to be hoped that their findings will cross Ministerial desks instead of remaining firmly on the shelves of academic libraries. However, as The Centre for Maternal and Child Enquiries noted in a key report on maternal obesity:

http://www.oaa-anaes.ac.uk/assets/managed/editor/File/CMACE/CMACE_Obesity_Report_2010_Final%20for%20printing.pdf

Further research is required within the following areas:

- Effective communication of risks associated with obesity
- Weight management and behavioural change regarding diet and exercise
- Optimal weight gain during pregnancy and after pregnancy
- Causes of stillbirth in women with obesity
- Factors predicting optimal timing and mode of delivery
- Optimal way to deliver specialist services.

If the UK is to become a truly fit and healthy nation such research should be promoted and promulgated and the necessary funding streams made available.

Recommendations

- 9.1 Government to expand the research base for weight management in the pre-pregnancy, pregnancy and postnatal periods, identify the gaps and

contribute to funding streams either independently or in support of relevant academic/charitable organisations

- 9.2 Benign research findings to be used to underpin Government advice on the conduct of maternity services for those caring in a professional capacity for pregnant women and their families.