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## Exploring obstetricians, midwives and general practitioners approach to weight management in pregnant women with a BMI $\geq 25$ : a qualitative study

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Complete List of Authors:	Flannery, Caragh; National University of Ireland, Galway , Health Behaviour Change Research Group, School of Psychology ; University College Cork , School of Public Health Mc Hugh, Sheena; University College Cork, School of Public Health Kenny, Louise; University of Liverpool School of Life Sciences, Department of Women's and Children's Health O'Riordan , Mairead; University College Cork , Department of Obstetrics and Gynaecology McAuliffe, Fionnuala; University College Dublin, Perinatal Research Centre, School of Medicine; University College Dublin, National Maternity Hospital Bradley, Colin; University College Cork, Dept of General Practice Kearney, Patricia; University College Cork, School of Public Health Byrne, Molly; University of Ireland, Galway , Health Behaviour Change Research Group, School of Psychology
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3 **Exploring obstetricians, midwives and general practitioners approach to weight management in**  
4 **pregnant women with a BMI  $\geq$ 25: a qualitative study**  
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7 C Flannery\*<sup>1, 2</sup>, S McHugh<sup>2</sup>, L Kenny<sup>3</sup>, MN O’Riordan<sup>4</sup>, FM McAuliffe<sup>5</sup>, C Bradley<sup>6</sup>, PM Kearney<sup>2</sup>, M  
8 Byrne<sup>1</sup>  
9  
10

11  
12 <sup>1</sup> Health Behaviour Change Research Group, School of Psychology, National University of Ireland,  
13 Galway  
14

15 <sup>2</sup> School of Public Health, University College Cork, Cork  
16

17 <sup>3</sup> Department of Women’s and Children’s Health, University of Liverpool  
18

19 <sup>4</sup> Department Obstetrics and Gynaecology, University College Cork,  
20

21 <sup>5</sup> UCD Perinatal Research Centre, School of Medicine, University College Dublin, National Maternity  
22 Hospital, Dublin  
23

24 <sup>6</sup> Department of General Practice, University College Cork, Cork  
25

26 Dr Sheena McHugh, School of Public Health, University College Cork, Cork, Ireland [S.McHugh@ucc.ie](mailto:S.McHugh@ucc.ie)  
27

28 Prof Louise Kenny, Women’s and Children’s Health, University of Liverpool, UK  
29

30 [Louise.Kenny@liverpool.ac.uk](mailto:Louise.Kenny@liverpool.ac.uk)  
31

32 Dr. Mairead O’Riordan, Dept. Obstetrics and Gynaecology, University College Cork, Cork.  
33

34 [Mairead.ORiordan@ucc.ie](mailto:Mairead.ORiordan@ucc.ie)  
35

36 Prof Fionnuala M McAuliffe, University College Dublin Perinatal Research Centre, School of  
37 Medicine, University College Dublin, National Maternity Hospital, Dublin, Ireland  
38

39 [fionnuala.mcauliffe@ucd.ie](mailto:fionnuala.mcauliffe@ucd.ie)  
40

41 Prof Colin Bradley, Dept. General Practice, University College Cork, Cork, Ireland [C.Bradley@ucc.ie](mailto:C.Bradley@ucc.ie)  
42

43 Prof Patricia Kearney, School of Public Health, University College Cork, Cork, Ireland  
44

45 [patricia.kearney@ucc.ie](mailto:patricia.kearney@ucc.ie)  
46

47 Prof Molly Byrne, Health Behaviour Change Research Group, National University of Ireland, Galway,  
48 Ireland [molly.byrne@nuigalway.ie](mailto:molly.byrne@nuigalway.ie)  
49

50 **\*Corresponding author information:** Ms Caragh Flannery BA, MSc, SPHeRE PhD student, Health  
51 Behaviour Change Research Group, NUI Galway; School of Public Health, University College Cork,  
52 Ireland; Tel: 021 420 5514; [c.flannery13@nuigalway.ie](mailto:c.flannery13@nuigalway.ie) / [cflannery@ucc.ie](mailto:cflannery@ucc.ie)  
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**ABSTRACT**

**Objective:** The aim of this study was to explore health care professionals (HCPs) beliefs and attitudes towards weight management for pregnant women with a BMI  $\geq 25\text{kg/m}^2$ .

**Design:** Qualitative study.

**Setting:** A public antenatal clinic in a large academic maternity hospital in Cork, Ireland and general practice clinics in the same region.

**Participants:** HCPs such as hospital-based midwives and consultant obstetricians and general practitioners (GPs).

**Method:** Semi-structured interviews were conducted with a purposive sample of hospital-based HCPs and a sample of GPs working in the same region. Interviews were recorded, transcribed and thematically analysed using NVivo software.

**Results:** Seventeen HCPs were interviewed (Hospital based=10; GPs=7). HCPs acknowledged weight as a sensitive conversation topic, leading to a *“softly-softly approach”* to weigh management. HCPs tried to strike a balance between being woman-centred and empathetic and medicalising the conversation. HCPs described *“doing what you can with what you have”* and *shifting the focus to managing obstetric complications*. Furthermore, there were *unclear roles and responsibilities* in terms of weight management.

**Conclusion:** Four themes identified by HCPs reflect the complexity of weight management and the challenges faced when trying to balance the medical and psychosocial needs of the women. HCPs need to have standardised approaches and evidence-based policies that support the consistent monitoring and management of weight during pregnancy.

**Key words:** Overweight, Obesity, Pregnancy, Gestational weight gain, General Practitioners, Health care professionals, Qualitative, Antenatal, Obstetrics

**Strengths and limitations of this study**

- The inductive approach used in this qualitative study revealed the nuances and tensions involved in the management of overweight and obese pregnant women.
- The recruitment HCPs across settings, including hospital based HCPs and GPs with a range of experiences is a further strength of this study.
- Most of the HCPs were recruited from a limited geographical area and their perceptions and approach to weight management for overweight and obese pregnant women may not reflect those of HCPs working elsewhere.
- Variation in interview length occurred due to constraints and demands on participants' time.

## INTRODUCTION

The prevalence of obesity during pregnancy is increasing [1]. Although some weight gain is to be expected during pregnancy, many women appear at their first antenatal appointment with a Body Mass Index (BMI)  $>29.9$  kg/m<sup>2</sup> representing a significant and increasing problem faced by health care professionals (HCPs) in obstetric practices [1, 2]. Recent studies, in Ireland, reported that between 19% and 25% of women were categorised as obese in the first trimester [3] or at their first antenatal visit [4]. Similarly, high levels have been reported in Britain with at least 20% being obese and 5% having severe or morbid obesity [1, 5-7].

Maternal obesity is defined as a BMI  $\geq 30$  kg/m<sup>2</sup> at the first antenatal consultation [8]. Gestational weight gain (GWG) is the total weight gained during pregnancy, with the largest weight gains generally occurring in the second and third trimester [9]. Problems associated with obesity during pregnancy include an increased risk of hypertensive disorders, higher rates of caesarean section and preterm delivery [10]. Moreover, excessive GWG in pregnancy increases the risk of developing gestational diabetes mellitus (GDM) and is a strong risk factor of long term obesity [11-13]. Obesity also presents a greater risk of perinatal complication such as macrosomia [14]. Recent literature reviews have identified diet and lifestyle interventions as a means of reducing the risk of GWG, GDM, and postnatal weight retention [15-17]. However, due to the poor quality of these studies the results should be interpreted with caution and uncertainty persists around their effectiveness [7].

While the delivery of antenatal care is different in many countries, a number of HCPs, including hospital-based HCPs (such as midwives and obstetricians) and general practitioners (GPs) provide care throughout pregnancy [18]. In Ireland, antenatal care is shared between hospital based HCPs and GPs [19]. The regular interactions with women during this time provide opportunities to support women to achieve positive lifestyle changes, particularly in terms of weight management [20]. While these HCPs have been identified as vital contributors to the antenatal services, little is known about the ways in which such professionals engage with overweight and obese pregnant women [21]. HCPs have key opportunities to influence lifestyle and weight management in this shared care arena which are not currently fully availed of [22, 23].

Few studies focus on the approach taken by HCPs regarding antenatal lifestyle advice and weight management [24]. Little is known about the use of guidelines in clinical practice and whether HCPs address the needs of overweight and obese pregnant women. A survey among obstetrics and trainee doctors in the United States found little knowledge of the revised Institute of

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3 Medicine (IOM) guidelines for appropriate GWG [25]. Over half of those surveyed were not aware of  
4 the new guidelines and less than 10% selected the correct BMI ranges or the correct GWG ranges.  
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6 Previous qualitative studies have highlighted a number of barriers to weight management for HCPs  
7 including communication difficulties [26], lack of confidence and training [27] and a lack of resources  
8 [28]. Understanding the ways in which HCPs currently manage maternal obesity is necessary to  
9 inform the development of antenatal lifestyle interventions. Therefore, the aim of this study was to  
10 explore HCPs beliefs and attitudes towards weight management and the factors that influence their  
11 approach for overweight and obese pregnant women.  
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## 16 17 **METHODS**

### 18 **Study design**

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20 A qualitative study was conducted to understand HCPs experiences of weight management for  
21 pregnant women with a BMI  $\geq 25\text{kg/m}^2$ . Ethical approval was obtained from the University College  
22 Cork (UCC) Clinical Research Ethics Committee of the Cork Teaching Hospitals (ref: ECM 4 (y)  
23 06/01/15).  
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### 28 **Sampling and recruitment**

29  
30 A purposive sample of hospital based HCPs were identified at Grand Rounds from a public antenatal  
31 clinic in a large academic maternity hospital, Cork University Maternity Hospital (CUMH), Ireland.  
32 Hospital based HCPs included midwives and consultant obstetricians who provide care for women  
33 either during pregnancy, labour and birth, or in the postnatal period. GPs in the Cork-Kerry region  
34 were identified using a GP list provided by the Department of General Practice, UCC, which included  
35 GP names and contact details. GPs were purposive sample based on gender and location of practice  
36 (urban/rural). Purposive sampling was supplemented by snowball sampling for all HCPs to maximise  
37 diversity. HCPs were eligible if they were engaged in clinical practice during the time of the study  
38 and regularly consulted with pregnant women with a BMI  $\geq 25\text{kg/m}^2$ . HCPs were provided with an  
39 invitation letter and study information sheet and were informed that (CF) was conducting this  
40 research as part of her PhD work. Follow up phone calls were made to determine if they were  
41 interested in participating.  
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### 50 **Interview process**

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52 Face-to-face semi-structured interviews were carried out by a single trained qualitative researcher  
53 (CF) at the hospital antenatal clinic or in the primary care setting between January and July 2016.  
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55 Written informed consent was obtained from all HCPs prior to the interview. The topic guide was  
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3 developed based on previous literature [10, 15, 29, 30]. Key areas for discussion included addressing  
4 weight, lifestyle advice and resources and supports available (Supplementary file 1). The topic guide  
5 and interview process were piloted by interviewing two HCPs (a midwife working in Australia and a  
6 nurse no longer involved in clinical practice). Following this, refinements were made to the prompts  
7 used to ensure the interview was designed to capture HCPs experiences. Pilot interviews were not  
8 included in the final sample. Data saturation was defined as being reached when no new themes  
9 emerged [31].  
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### 14 15 **Data Analysis**

16 Interviews were audio recorded and transcribed verbatim. NVivo software was used to facilitate  
17 data analysis. Thematic analysis as described by Braun and Clarke, 2006 was used to analyse the data  
18 [32]. An inductive approach was used, where; transcripts were read and open-coded. These codes  
19 were grouped according to HCPs beliefs and attitudes, their approach to weight management and  
20 the reasons for this approach. Codes, and categories were discussed and sub-themes were  
21 synthesised and organised to develop broader themes (CF and SMH). The data were analysed  
22 independently by one researcher (CF) with a subset of the transcripts dual coded (CF and SMH). To  
23 ensure the consistency of the findings an audit trail was kept for transparency in the analysis.  
24 Hospital based HCPs and GPs were reported as HCPs when similar views and attitudes were  
25 expressed. Differences between hospital based HCPs and GPs were also recorded. The consolidated  
26 criteria for reporting qualitative research (COREQ) statement was used to inform reporting of the  
27 findings (Supplementary File 2).  
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### 37 38 **RESULTS**

39 Thirty-six HCPs were invited; seventeen participated (hospital based n=10) and (GPs n=7). Data  
40 saturation was deemed to have been reached after twelve interviews, as no new themes emerged in  
41 the preceding five interviews [33, 34]. Table 1 provides details of the participants' characteristics  
42 including gender, occupation and location of practice. The interviews for hospital based HCPs ranged  
43 from 23 to 50 minutes in duration and GP interviews ranged from 14 to 35 minutes.  
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49 **Insert Table 1 here**

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51 Four major themes were identified that relate to HCPs attitudes and approaches to weight  
52 management: the *'softly-softly' approach to weight management*; *'doing what you can with what*  
53 *you have'*, *shifting the focus to the management of obstetric complications* and *'unclear roles and*  
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responsibilities for lifestyle advice. Together these four themes reflect the complexity of weight management and how hospital based HCPs and GPs discuss and approach weight management. Furthermore, HCPs describe the constraints within the system and highlight their attitudes to weight. Hospital based HCPs and GPs shared similar views in terms of weight management, with differences emerging on issues such as weighing practices and concerns about who is ultimately responsible for the management of overweight and obese pregnant women. The themes are presented in Figure 1.

Insert Figure 1 here

### The 'softly-softly' approach to weight management

HCPs identified the tension between attitudes towards weight at a population and individual level. At the population level, concerns were clear about the dramatic increase in maternal obesity and the attitude that *'being overweight is fine...people look at themselves and say, "Well, I'm just the same size as her." or "I'm thinner than her", therefore, I'm not overweight (Obstetrician 03)*. Furthermore, socialisation and family norms have resulted in unhealthy learned behaviours and an environment in which obesity is now acceptable; *'we're normalising obesity, it's not perceived as a problem' (GP 05)*. Despite this, at an individual level when managing maternal obesity, HCPs recognised the presence of stigma relating to weight and obesity. As a result, a *'softly-softly' approach to weight management* among overweight and obese pregnant women was adopted. HCPs used this approach to raise and address the topic of weight throughout pregnancy. This cautious and diplomatic approach involved trying to strike a balance between being empathetic towards the women, medicalising the issue and acknowledging their duty as HCPs to inform the woman about the risks associated with overweight and obesity.

The approach depended on how the women reacted to initial attempts to discuss weight and thus varied across women. In participants' experience, most women reacted negatively to the topic of weight and obesity in pregnancy; they *'disengage'*, the *'shutters come down'*, they can get a *'bit defensive'* or *'dismissive of it'* and thus it's *'not a two-way interaction'*.

HCPs were conscious of the *'patient experience'* and that their professional role required them to be *'sensitive'*, *'non-judging'*, encouraging, motivating and to act as a *'counsellor'* for each of their overweight patients. HCPs were concerned about using the right language so as not to cause offence, anger or upset. HCPs acknowledged that you cannot use the word *'fat'*, however, in some

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3 cases HCPs highlighted the need to be 'upfront' and 'blunt' to get the message across. Hospital  
4 based HCPs also recognised the need to be 'clear', to 'state the facts' and to be 'honest' with the  
5 woman as it is their responsibility to help the woman manage her weight.  
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9 *'No, I think we need to find a way of getting that message across and I think part of that is*  
10 *just normalising it...we've got to normalise chatting about weight...I've tried a whole range*  
11 *of different ways and sometimes it's regarded as confrontational and I can feel that they're*  
12 *looking at me thinking, "Well, I don't like that doctor." It's not that I'm trying to make her*  
13 *feel bad, I want to point this out and I try and medicalise it and say, "Well, you know your*  
14 *body mass index is over 30, that means you're obese, that puts you at risk of high blood*  
15 *pressure, diabetes' (Obstetrician 03)*  
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21 Broaching the subject of weight

22 HCPs felt the need to adopt a 'softly-softly' approach in relation to the topic of weight compared to a  
23 more direct approach they might take with issues such as blood pressure. Raising the subject of  
24 weight was influenced by confidence and experience. Some HCPs considered themselves  
25 experienced enough to discuss 'uncomfortable truths' about obesity such as potential complications.  
26 Others found it difficult to broach the subject; in particular hospital based HCPs such as junior  
27 midwives found raising the topic 'awkward'. To facilitate the conversation, more experienced  
28 hospital based HCPs drew on their personal weight issues to 'relate to the women'.  
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36 *'...I'm not the skinniest person in the world. I think it's easier when you can say, "Look, we all*  
37 *have our challenges and you've got to work hard at it"' (Obstetrician 06)*  
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40 More detached approaches were also described; with hospital based HCPs using tools such as a BMI  
41 categorisation tool to frame the conversation because using BMI 'isn't as upsetting to somebody as if  
42 you said, "You're fat."'. Furthermore, because of women's weight, difficulties were often  
43 experienced when palpating a woman's abdomen and conducting fetal scans, offering an opportune  
44 situation to raise the issue and to discuss the potential complications.  
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50 *'I actually say it straight out to them when I am scanning, look unfortunately you carry the*  
51 *extra adipose tissue I am finding it difficult, there is too much fat around you abdomen*  
52 *which you need to watch. I would say that straight-out...'* (Midwife 01)  
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HCPs acknowledged that conversations about weight occur frequently throughout pregnancy as they have continuous contact with pregnant women. However, these discussions were 'quick conversations' due to large 'caseloads', time and due to the number of topics that needed to be addressed within the consultations. 'it would be a couple of minutes given to a discussion about their weight and the problems with it ...' (Obstetrician 09)

### **'Doing what you can with what you have' to manage overweight and obesity**

In the current 'obesogenic environment' HCPs faced numerous challenges when managing weight. It was identified that the woman's health, their level of risk in pregnancy and scarce resources dictated what HCPs could do to support women to manage their weight.

Hospital based HCPs were adapting the evidence to deal with large caseloads of women with high BMIs '...so we don't talk about weight to the women who are overweight, we save that for the women who are obese...' (Obstetrician 03). Due to scarce resources, priority was given to the obese women rather than overweight women: 'we have far too many women with BMIs in the 40s or even in the 50s in whom we focus our limited resources' (Obstetrician 03) therefore, women with a BMI  $\geq 25$  'doesn't raise as much of a red flag'. Limited dietetic services within the hospital were discussed as an example of the inadequate resources, with this service only offered to those with a diagnosis of GDM. This reflected the 'doing what you can with what you have' approach as hospital based HCPs could do more for these pregnant women. Hospital based HCPs emphasised that this service needed to reach all women, particularly overweight and obese women (without GDM) who could benefit from that type of intervention. Also, access to dietetics influenced GPs' management of weight; long waiting times for referrals meant that 'they lost that window' to intervene with the woman.

Most hospital based HCPs did not have any 'specific written guidelines' to follow while others described using and applying varying ranges of weight gain in pregnancy. A BMI  $\geq 30\text{kg/m}^2$  was so common, it was considered a low priority for services, management and advice rendering some guidelines 'inadequate'.

*'I think the guidelines and the public health policies that are out there are inadequate.....they're certainly not permeating into a lot of healthcare professionals' consciousness and I think many doctors don't regard a BMI of 30 [as priority] because it's becoming more and more common' (Obstetrician 07)*

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4 The 'doing what you can with what you have' approach to weight management was also reflected in  
5 weighing practices and attitudes towards weighing. Weighing practices varied amongst the HCPs and  
6 there were divergent attitudes towards its usefulness and appropriateness. GPs highlighted that the  
7 evidence and guidelines no longer recommend weight as a 'clinical indicator'.  
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12 *'...it was stopped being done as routine because it wasn't correlating with health outcomes.*  
13 *That's my understanding of it, but I certainly would be interested to see if there are new*  
14 *guidelines about it. So if it is significant, I think it should be included in the chart...'* (GP 03)  
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18 However, hospital based HCPs such as midwives were keeping track of women's weight, particularly  
19 at the booking visit and again at 28 weeks. Weight and BMI was used in the hospital to refer women  
20 for anaesthetic assessment to determine the woman's 'anaesthetic risk'.  
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25 *'They [women BMI $\geq$ 35] would have anaesthetic risk; a higher risk of going into distress and*  
26 *having an emergency section, but even if they want epidural analgesia, they'd have to be*  
27 *assessed for that as well'* (Midwife 02)  
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### 30 31 **Shifting the focus to the management of obstetric complications**

32 The risk of obstetric complications at any stage in pregnancy takes precedent over efforts to manage  
33 weight with hospital based HCPs acknowledging *'it's too late [to manage weight] at that stage'*. For  
34 hospital based HCPs, weight management was superseded when obstetric complications arose. At  
35 this point the woman's complications required obstetric care, shifting the focus to the immediate  
36 health of the woman and baby.  
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42 *'If they develop hypertension, I talk about hypertension and the treatment of. It's very*  
43 *difficult at that point, they're now hypertensive, the baby's at risk of growth restriction,*  
44 *they're at risk of early delivery, we need to get their blood pressure under control, take care*  
45 *of the maternal problems and make sure the foetus is okay. It's too late at that stage to*  
46 *start going, "Oh well, you have this now because you're fat." no, it's too late'* (Obstetrician  
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53 Furthermore, hospital based HCPs discussed the right situation to encourage weight management  
54 and that when women experience an obstetric complication, discussing weight was not appropriate.  
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3 A midwife spoke about an overweight and obese young woman who experienced infection and  
4 sepsis after an emergency caesarean, highlighting this as an unsuitable time to focus on or address  
5 weight management.  
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9 *“...I’m really sorry that this happened to you, let’s not focus on your weight right now, let’s*  
10 *just focus on you being quite unwell and very septic and get you off your ventilation...”*  
11 *(Midwife 10)*  
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### 14 15 **Unclear roles and responsibilities for lifestyle advice**

16 In the context of shared maternity care, HCPs highlighted the challenge of providing continuity of  
17 care and questioned who is ultimately responsible for managing weight. It was difficult for hospital  
18 based HCPs to provide continuous weight management and advice as they had limited opportunity  
19 to follow up with the same women. Therefore, responsibility of continuous care fell to the GPs.  
20 Hospital based HCPs suggested the GP would have a better ‘family picture’ and would have the  
21 opportunity to engage with these women on numerous occasions preconception and throughout  
22 pregnancy. *‘I think there GP should be one that keeps an eye on it [weight], he is the continuous*  
23 *person that’s with them’ (Midwife 01)*  
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31 In contrast, GPs tended to put onus on the hospital based HCPs, reporting *“Oh well look, the hospital*  
32 *will take care of that”* or we are ‘very stretched’ in general practice. Even though both hospital based  
33 HCPs and GPs are taking part in shared antenatal care, GPs felt there was little communication  
34 between primary and secondary care and more clarity was required around role responsibilities and  
35 expectations within the shared care setting. This would ensure that weight related conversations  
36 were consistent and reliable.  
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### 41 42 **DISCUSSION**

43 This qualitative study demonstrates the tensions surrounding weight management during pregnancy  
44 for women with a BMI  $\geq 25\text{kg/m}^2$  from the perspective of hospital based HCPs and GPs. Four main  
45 themes relating to attitudes and approaches to weight management were identified: the ‘softly-  
46 softly’ approach, ‘doing what you can with what you have’, ‘shifting the focus to the management of  
47 obstetric complications’, and ‘unclear roles and responsibilities for lifestyle advice’. These themes  
48 reflect how HCPs discuss and manage weight, and the challenges they face when trying to balance  
49 the medical and psychosocial needs of the women.  
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3 The 'softly-softly' approach is described as '*cautious and patient and avoids direct action or force*'  
4 which reflects HCPs accounts of their approach to providing care for overweight and obese pregnant  
5 women. Similar to this study, previous research identified an increased acceptance of obesity within  
6 the population [23, 35-37] with fewer people now defining themselves as overweight and obese and  
7 underestimating their weight status [35, 36, 38]. Furthermore, stigma in relation to obesity was also  
8 present in this study and in previous research with HCPs feeling the discomfort and awkwardness  
9 around weight conversations in pregnancy [37]. A lack of confidence and experience determined the  
10 approach used to broach the subject of weight, with younger midwives in particular finding the topic  
11 awkward. This is supported by existing literature, with junior HCPs having negative opinions about  
12 their skills for treating obese patients [39, 40]. HCPs in this study were aware that weight needs to  
13 be addressed with care, to avoid upsetting the women. Similarly, in other studies, HCPs were  
14 concerned about victimising the women or jeopardising their relationship with the women when  
15 raising the subject of weight [23, 28]. HCPs tried to broach the subject of weight by discussing their  
16 own weight loss journeys. In contrast, a study exploring the experiences of HCPs found that HCPs  
17 with high BMIs felt they were not in a position to address weight and therefore veered away from  
18 the conversation [39]. Standardised questions could be used with all pregnant women to reduce  
19 stigma associated with the conversation of weight and increase HCPs' confidence [41]. Experienced,  
20 well-informed HCPs need to share their training, knowledge and experience with more junior staff,  
21 including prompts and communication strategies, in order to improve addressing the subject of  
22 weight [26]. Scarce resources determined HCPs' approach to managing weight, particularly dietetic  
23 services which were consequently limited to women with GDM. Similarly, previous research  
24 identified limited resources available within maternity units as a barrier to managing weight during  
25 pregnancy [23, 37]. With a number of diet and physical activity interventions reducing GWG and  
26 GDM [7, 17, 42], it is clear that services such as dietetics need to reach all women, particularly  
27 women with a BMI  $\geq 25\text{kg/m}^2$ . As revealed in this study, HCPs had different views on weighing  
28 practices. Furthermore, advice regarding the amount of weight to gain in pregnancy varied. This is  
29 perhaps not surprising as there is no formal guidance for appropriate GWG in Ireland. Similar  
30 findings were reported in the UK with HCPs unsure about appropriate GWG in pregnancy [24].  
31 Further research and national guidance is needed to address divergent opinions about the benefits  
32 of weighing practices and lack of clarity on appropriate GWG to support standardised shared  
33 antenatal care.  
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### Strengths and limitations

The inductive approach used in this qualitative study revealed the nuances and tensions involved in the management of overweight and obese pregnant women. The recruitment of a diverse sample of HCPs across settings, including hospital based HCPs and GPs with a range of experiences and specialities is a further strength of this study. Most of the HCPs were recruited from a limited geographical area and their perceptions and approach to weight management may not reflect those of HCPs working elsewhere. Variation in interview length occurred due to constraints and demands on participants' time. Theoretical saturation of themes across all groups of HCPs was reached after twelve interviews; however, it may be possible that theoretical saturation within each subgroup of HCPs was not achieved.

### Practice Implications

HCPs are aware of the stigma around the topic of weight, particularly for women with a BMI  $\geq 25\text{kg/m}^2$ . As part of encouraging healthy lifestyle choices, HCPs need to normalise the conversation around weight. Other health behaviours such as smoking and alcohol are considered more acceptable and easier to discuss [23], therefore HCPs need to approach weight conversations in a similar manner. Training, education and skill development is required for HCPs to care effectively for these women. Lack of continuity of care undermines the consistency of weight management conversations and advice. Therefore, HCPs need to have standardised approaches to weight management and where possible need to follow women during pregnancy to build rapport and ensure consistent information throughout.

### Conclusion

How obesity is perceived in society is changing rapidly for the general public and for HCPs, with implications for the health and well-being of overweight and obese pregnant women. Building rapport is necessary to deal with the sensitive nature of weight which requires consistent contact and guidance from HCPs. HCPs' roles and responsibilities for weight management within shared care need to be clearer in this '*obeseogenic environment*'. By ensuring HCPs have the confidence, knowledge and opportunity to discuss weight and lifestyle factors with pregnant women, the women in turn may initiate or maintain healthy behaviours during pregnancy. This study provides important insights into the challenges HCPs face in managing weight for women with a BMI  $\geq 25\text{kg/m}^2$ . Within shared care, evidence-based policies that support the consistent monitoring and management of weight during pregnancy could improve care and outcomes for these women. These

findings demonstrate the need for population level approaches and the development of antenatal lifestyle and weight management interventions.

## FIGURE LEGEND

**Figure 1: Drivers and approach to weight management for overweight and obese pregnant women**

### Supplementary data:

File 1: Topic Guide

File 2: COREQ Statement

### Ethical approval and consent to participate

(CF) confirms that all patient identifiers have been removed so the patients described are not identifiable and cannot be identified through the details of the story. Ethical approval was obtained from the University College Cork Clinical Research Ethics Committee of the Cork Teaching Hospital (ref: ECM 4 (y) 06/01/15). Written informed consent was obtained from all participants.

### Conflict of interest

The authors declare that they have no competing interests.

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### Author's contributions

CF, SMH, PK and MB conceived and designed the study. CF, SMH developed the topic guide and study protocol. CB facilitated access to GPs for recruitment to the study. CF conducted and transcribed the interviews. CF and SMH coded the transcripts, developed and refined the themes. CF wrote the first draft of the paper. All authors (SMH, LK, MOR, FMA, CB, PMK and MB) contributed to successive drafts and read and approved the final manuscript



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**Data sharing statement**

No additional data are available

For peer review only

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**Table 1: Profile characteristics of HCPs (N=17)**

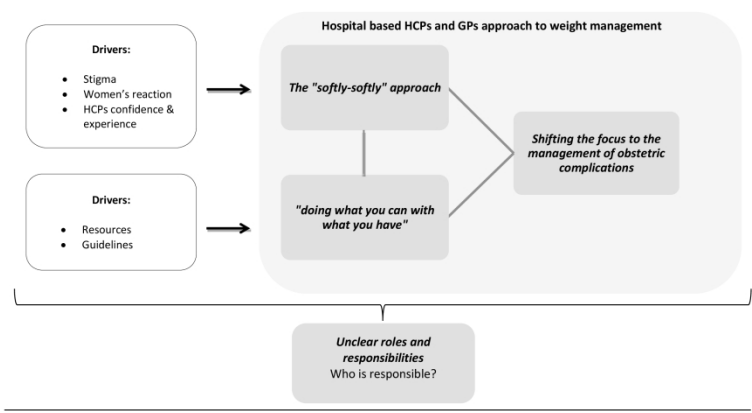
	Male	Female
<b>Occupation</b>		
Midwife <sup>A</sup>	-	4
SHO Senior House Officer	-	1
Consultant Obstetrician <sup>B</sup>	2	3
General Practitioners	3	4
<b>Location</b>		
Cork	4	12
Kerry	1	-

<sup>A</sup> Midwife working in diabetic clinic (n=1); labour ward (n=1); outpatient department (n=2)

<sup>B</sup> Obstetrician's working in obstetrics with sub-specialist interests such as maternal medicine, high risk pregnancies, fetal medicine and complicated pregnancies (n=4); gynaecology (n=1)

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Figure 1: Drivers and approach to weight management for overweight and obese pregnant women



HCPs, health care professionals; GPs, general practitioners

297x209mm (300 x 300 DPI)

Table S1: Topic Guide

	Questions	Prompts
Intro	Tell me a bit about what you do here in CUMH	Types of pregnant women Stage of pregnancy (booking visit, delivery)
	When you see an OB woman for the 1 <sup>st</sup> time during pregnancy, what usually happens?	What does the assessment/visit involve? Do you weigh them? What do you talk about? How do you think that information is usually received? What issues does the woman usually raise? Topics covered: diet, exercise, nausea, cravings
Usual Care	Can you tell me a bit about the last women you saw?	What stage of pregnancy? When was this? Describe the mother... What did you talk about? What issues did she raise? Topics: diet, PA, nausea, cravings...
	Do you discuss the woman's weight specifically?	Tell me about that... - Appropriate weight gain - How do you judge (guidelines) - Do you know what advice to give?
	Having the conversation	How do you feel talking about weight and obesity? How is it received? (upset, shock, embarrassment) How could this conversation be made easier? (for you/the woman)
	And what about PA, would that come up?	- Women previously exercising? - Types of PA?
	How are these issues followed up during pregnancy?	If a woman is gaining EGW, what would you do?
	To what extent do resources influence your visit with an OB pregnant woman?	- Time available - Access to equipment (weighing scales) - Ability to refer to dietician - Patients co-operation
	Can you think of times where women have made positive life style changes during pregnancy? And those who haven't made any changes, what were the barriers?	Tell me about that... Motivations, Supports, Outcome Any targeted support available? - Dietetic services, exercise programmes, weight management programme. - Women's perceptions of PA (benefits)
	What do you think would help these women to change their behaviour during pregnancy?	Have you seen technology being used to support BC? - What kind, features, - Did someone recommend it? - What information was it providing to women? What about mobile phone apps, text message/phone, web based information forums, pedometer? Would these support mechanisms be useful? - If it provided you with information as well
	Any other comments or suggestions on how behaviour change could be supported during pregnancy?	- Individual meetings - Group peer led sessions

CUMH, Cork University Maternity Hospital; OB, overweight and obese; PA, Physical activity; HCP, Health care professional; EGW, Excessive gestational weight; BC, Behaviour change



**Table S2: Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist**

Developed from:

Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page no.
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	5
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1
3. Occupation	What was their occupation at the time of the study?	1
4. Gender	Was the researcher male or female?	1
5. Experience and training	What experience or training did the researcher have?	5
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	5
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	5
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	1, 5
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	5, 6
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	5
12. Sample size	How many participants were in the study?	6
13. Non-participation	How many people refused to participate or dropped out? Reasons?	6
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	5, 6

15. Presence of non-participants	Was anyone else present besides the participants and researchers?	n/a
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	6, 20
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	5, 6
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	n/a
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	6
20. Field notes	Were field notes made during and/or after the inter view or focus group?	Yes
21. Duration	What was the duration of the inter views or focus group?	6
22. Data saturation	Was data saturation discussed?	6
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	6
25. Description of the coding tree	Did authors provide a description of the coding tree?	n/a
26. Derivation of themes	Were themes identified in advance or derived from the data?	6
27. Software	What software, if applicable, was used to manage the data?	6
28. Participant checking	Did participants provide feedback on the findings?	n/a
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	6-11
30. Data and findings consistent	Was there consistency between the data presented and the findings?	6-11
31. Clarity of major themes	Were major themes clearly presented in the findings?	6-11
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	6-11

Once you have completed this checklist, please save a copy and upload it as part of your submission. When requested to do so as part of the upload process, please select the file type: **Checklist**. You will NOT be able to proceed with submission unless the checklist has been uploaded. Please DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.

# BMJ Open

## Exploring obstetricians, midwives and general practitioners approach to weight management in pregnant women with a BMI $\geq 25$ : a qualitative study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-024808.R1
Article Type:	Research
Date Submitted by the Author:	22-Oct-2018
Complete List of Authors:	Flannery, Caragh; National University of Ireland, Galway , Health Behaviour Change Research Group, School of Psychology ; University College Cork , School of Public Health Mc Hugh, Sheena; University College Cork, School of Public Health Kenny, Louise; University of Liverpool School of Life Sciences, Department of Women's and Children's Health O'Riordan , Mairead; University College Cork , Department of Obstetrics and Gynaecology McAuliffe, Fionnuala; University College Dublin, Perinatal Research Centre, School of Medicine; University College Dublin, National Maternity Hospital Bradley, Colin; University College Cork, Dept of General Practice Kearney, Patricia; University College Cork, School of Public Health Byrne, Molly; University of Ireland, Galway , Health Behaviour Change Research Group, School of Psychology
<b>Primary Subject Heading</b>:	Health services research
Secondary Subject Heading:	Obstetrics and gynaecology, Public health, Qualitative research
Keywords:	Diabetes in pregnancy < DIABETES & ENDOCRINOLOGY, MEDICAL EDUCATION & TRAINING, OBSTETRICS, QUALITATIVE RESEARCH, PUBLIC HEALTH

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Manuscripts

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3 1 **Exploring obstetricians, midwives and general practitioners approach to weight management in**  
4 **pregnant women with a BMI  $\geq$ 25: a qualitative study**  
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8 4 C Flannery\*<sup>1,2</sup>, S McHugh<sup>2</sup>, L Kenny<sup>3</sup>, MN O’Riordan<sup>4</sup>, FM McAuliffe<sup>5</sup>, C Bradley<sup>6</sup>, PM Kearney<sup>2</sup>, M Byrne<sup>1</sup>  
9 5

10 6 <sup>1</sup> Health Behaviour Change Research Group, School of Psychology, National University of Ireland, Galway

11 7 <sup>2</sup> School of Public Health, University College Cork, Cork

12 8 <sup>3</sup> Department of Women’s and Children’s Health, University of Liverpool

13 9 <sup>4</sup> Department Obstetrics and Gynaecology, University College Cork,

14 10 <sup>5</sup> UCD Perinatal Research Centre, School of Medicine, University College Dublin, National Maternity

15 11 Hospital, Dublin

16 12 <sup>6</sup> Department of General Practice, University College Cork, Cork

17 13  
18 14 Dr Sheena McHugh, School of Public Health, University College Cork, Cork, Ireland [S.McHugh@ucc.ie](mailto:S.McHugh@ucc.ie)

19 15 Prof Louise Kenny, Women’s and Children’s Health, University of Liverpool, UK

20 16 [Louise.Kenny@liverpool.ac.uk](mailto:Louise.Kenny@liverpool.ac.uk)

21 17 Dr. Mairead O’Riordan, Dept. Obstetrics and Gynaecology, University College Cork, Cork.

22 18 [Mairead.ORiordan@ucc.ie](mailto:Mairead.ORiordan@ucc.ie)

23 19 Prof Fionnuala M McAuliffe, University College Dublin Perinatal Research Centre, School of Medicine,

24 20 University College Dublin, National Maternity Hospital, Dublin, Ireland [fionnuala.mcauliffe@ucd.ie](mailto:fionnuala.mcauliffe@ucd.ie)

25 21 Prof Colin Bradley, Dept. General Practice, University College Cork, Cork, Ireland [C.Bradley@ucc.ie](mailto:C.Bradley@ucc.ie)

26 22 Prof Patricia Kearney, School of Public Health, University College Cork, Cork, Ireland

27 23 [patricia.kearney@ucc.ie](mailto:patricia.kearney@ucc.ie)

28 24 Prof Molly Byrne, Health Behaviour Change Research Group, National University of Ireland, Galway,

29 25 Ireland [molly.byrne@nuigalway.ie](mailto:molly.byrne@nuigalway.ie)  
30 26

31 27 **\*Corresponding author information:** Ms Caragh Flannery BA, MSc, SPHeRE PhD student, Health  
32 28 Behaviour Change Research Group, NUI Galway; School of Public Health, University College Cork,  
33 29 Ireland; Tel: 021 420 5514; [c.flannery13@nuigalway.ie](mailto:c.flannery13@nuigalway.ie) / [cflannery@ucc.ie](mailto:cflannery@ucc.ie)  
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36 32 **ABSTRACT**  
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3 33 **Objective:** The aim of this study was to explore health care professionals (HCPs) beliefs and attitudes  
4 34 towards weight management for pregnant women with a BMI  $\geq 25$ kg/m<sup>2</sup>.

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8 36 **Design:** Qualitative study.  
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11 38 **Setting:** A public antenatal clinic in a large academic maternity hospital in Cork, Ireland and general  
12 39 practice clinics in the same region.  
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16 41 **Participants:** HCPs such as hospital-based midwives and consultant obstetricians and general  
17 42 practitioners (GPs).  
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21 44 **Method:** Semi-structured interviews were conducted with a purposive sample of hospital-based HCPs  
22 45 and a sample of GPs working in the same region. Interviews were recorded, transcribed and thematically  
23 46 analysed using NVivo software.  
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28 48 **Results:** Seventeen HCPs were interviewed (Hospital based=10; GPs=7). Four themes identified the  
29 49 complexity of weight management in pregnancy and the challenges HCPs faced when trying to balance  
30 50 the medical and psychosocial needs of the women. HCPs acknowledged weight as a sensitive  
31 51 conversation topic, leading to a *“softly-softly approach”* to weight management. HCPs tried to strike a  
32 52 balance between being woman-centred and empathetic and medicalising the conversation. HCPs  
33 53 described *“doing what you can with what you have”* and *shifting the focus to managing obstetric*  
34 54 *complications*. Furthermore, there were *unclear roles and responsibilities* in terms of weight  
35 55 management.  
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42 56  
43 57 **Conclusion:** HCPs need to have standardised approaches and evidence-based guidelines that support  
44 58 the consistent monitoring and management of weight during pregnancy.  
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47 59  
48 60 **Key words:** Overweight, Obesity, Pregnancy, Gestational weight gain, General Practitioners, Health care  
49 61 professionals, Qualitative, Antenatal, Obstetrics  
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### Strengths and limitations of this study

- The inductive approach used in this qualitative study revealed the nuances and tensions involved in the management of overweight and obese pregnant women.
- The recruitment HCPs across settings, including hospital based HCPs and GPs with a range of experiences is a further strength of this study.
- Most of the HCPs were recruited from a limited geographical area and their perceptions and approach to weight management for overweight and obese pregnant women may not reflect those of HCPs working elsewhere.
- Variation in interview length occurred due to constraints and demands on participants' time.

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## 100 INTRODUCTION

101 The prevalence of overweight and obesity during pregnancy is increasing [1]. Although some weight gain  
102 is to be expected during pregnancy, many women appear at their first antenatal appointment with a  
103 Body Mass Index (BMI)  $\geq 25$  kg/m<sup>2</sup> representing a significant and increasing problem faced by health care  
104 professionals (HCPs) in obstetric practices [1, 2]. Recent studies, in Ireland, reported that between 19%  
105 and 25% of women were categorised as overweight or obese in the first trimester [3] or at their first  
106 antenatal visit [4]. Furthermore, obesity in women was most widespread in high income countries with a  
107 prevalence of 25% in the UK and 34% in the USA [5]. In Europe, the prevalence of overweight and  
108 obesity among pregnant women ranged between 33% and 50% [6]

109  
110 Overweight is defined as BMI  $\geq 25$  kg/m<sup>2</sup> and obesity is defined as a BMI  $\geq 30$  kg/m<sup>2</sup> which is assessed at  
111 the first antenatal consultation [7]. Gestational weight gain (GWG) is the total weight gained during  
112 pregnancy, with the largest weight gains generally occurring in the second and third trimester [7, 8]. The  
113 Institute of Medicine (IOM) recommends different gestational weight gain for each BMI category [7, 9].  
114 These guidelines are individualised to pre-pregnancy BMI and are based on evidence of weight gain  
115 patterns in pregnancy and on health outcomes for mother and baby. A recent review that compared  
116 national gestational weight gain guidelines and energy intake recommendations found that 31% of  
117 countries were adopting these gestational weight gain guidelines [10]. Furthermore, after two different  
118 searches of available guidelines, the authors of the review found no gestational weight gain guidelines  
119 or recommendations available for Ireland [10].

120  
121 Problems associated with obesity during pregnancy include an increased risk of hypertensive disorders,  
122 higher rates of caesarean section and preterm delivery [11]. Moreover, excessive GWG in pregnancy  
123 increases the risk of developing gestational diabetes mellitus (GDM) and is a strong risk factor of long  
124 term obesity [12-14]. Obesity also presents a greater risk of perinatal complication such as macrosomia  
125 [15]. Recent literature reviews have identified diet and lifestyle interventions as a means of reducing the  
126 risk of GWG, GDM, and postnatal weight retention [16-18]. However, due to the poor quality of these  
127 studies and heterogeneity in the intervention designs the results should be interpreted with caution and  
128 uncertainty persists around their effectiveness [19].

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5 130 While the delivery of antenatal care is different in many countries, a number of HCPs, including hospital-  
6 131 based HCPs (such as midwives and obstetricians) and general practitioners (GPs) provide care  
7  
8 132 throughout pregnancy [20]. In Ireland, antenatal care is shared between hospital based HCPs and GPs  
9  
10 133 [21]. Pregnancy has been identified as a “teachable moment” where woman’s health motivations could  
11  
12 134 be harnessed for long-term behaviour change and wider public health benefits beyond pregnancy, given  
13  
14 135 women’s vital role in supporting healthy lifestyles in the wider family unit [22]. The regular interactions  
15  
16 136 between HCPs and women during pregnancy provide opportunities to support women to achieve  
17  
18 137 positive lifestyle changes, particularly in terms of weight management [23, 24]. While these HCPs have  
19  
20 138 been identified as vital contributors to the antenatal services, in Ireland, little is known about the ways  
21  
22 139 in which such professionals engage with overweight and obese pregnant women. HCPs have key  
23  
24 140 opportunities to influence lifestyle and weight management in this shared care arena which are not  
25  
26 141 currently fully availed of [25, 26].

27 142  
28 143 Few studies in Ireland focus on the approach taken by HCPs regarding antenatal lifestyle advice and  
29  
30 144 weight management [27-29]. Little is known about the use of guidelines in clinical practice and whether  
31  
32 145 HCPs address the needs of overweight and obese pregnant women. A survey among obstetrics and  
33  
34 146 trainee doctors in the United States found little knowledge of the revised Institute of Medicine (IOM)  
35  
36 147 guidelines for appropriate GWG [30]. Over half of those surveyed were not aware of the new guidelines  
37  
38 148 and less than 10% selected the correct BMI ranges or the correct GWG ranges. Previous qualitative  
39  
40 149 studies have highlighted a number of barriers to weight management for HCPs including communication  
41  
42 150 difficulties between health care professionals and patient [31], lack of confidence and training to  
43  
44 151 provide weight advice [32] and a lack of resources within antenatal care [33]. Understanding the ways in  
45  
46 152 which HCPs currently manage maternal obesity in an Irish context is necessary to inform the  
47  
48 153 development of antenatal lifestyle interventions. Therefore, the aim of this study was to explore HCPs  
49  
50 154 beliefs and attitudes towards weight management and their approach to working with overweight and  
51  
52 155 obese pregnant women at a large academic maternity hospital in Cork, Ireland and primary care settings  
53  
54 156 in the same region.

55 157

## 56 158 **METHODS**

### 57 159 **Study design**



1  
2  
3 160 A qualitative study was conducted to understand HCPs experiences of weight management for both  
4  
5 161 overweight and obese pregnant women. Ethical approval was obtained from the University College Cork  
6  
7 162 (UCC) Clinical Research Ethics Committee of the Cork Teaching Hospitals (ref: ECM 4 (y) 06/01/15).  
8  
9 163

### 10 164 **Sampling and recruitment**

11 165 Hospital based HCPs were purposively sampled and identified at Grand Rounds from a public antenatal  
12 166 clinic in a large academic maternity hospital, Cork University Maternity Hospital (CUMH), Ireland. CUMH  
13 167 is a large academic maternity hospital in the South of Ireland where approximately 6,657 new obstetrics  
14 168 patients entered in 2015 [34]. Hospital based HCPs included midwives and consultant obstetricians who  
15 169 provide care for women either during pregnancy, labour and birth, or in the postnatal period. GPs in the  
16 170 Cork-Kerry region were identified using a GP list provided by the Department of General Practice, UCC,  
17 171 which included GP names and contact details. GPs were purposively sample based on gender and  
18 172 location of practice (urban/rural). GPs were recruited from single or group practices serving both public  
19 173 and private patients. HCPs were eligible if they were engaged in clinical practice during the time of the  
20 174 study and regularly consulted with pregnant women with a BMI  $\geq 25\text{kg/m}^2$ . HCPs were provided with an  
21 175 invitation letter and study information sheet and were informed that (CF) was conducting this research  
22 176 as part of her PhD work. Follow up phone calls were made to determine if they were interested in  
23 177 participating.  
24  
25 178

### 26 179 **Interview process**

27 180 Face-to-face semi-structured interviews were carried out by a single trained qualitative researcher (CF)  
28 181 at the hospital antenatal clinic or in the primary care setting between January and July 2016. Written  
29 182 informed consent was obtained from all HCPs prior to the interview. The topic guide was developed  
30 183 based on previous literature [11, 18, 35, 36]. Key areas for discussion included addressing weight,  
31 184 lifestyle advice and resources and supports available (Supplementary file 1). The topic guide and  
32 185 interview process were piloted by interviewing two HCPs (a midwife working in Australia and a nurse no  
33 186 longer involved in clinical practice). Following this, refinements were made to the prompts used to  
34 187 ensure the interview was designed to capture HCPs experiences. Pilot interviews were not included in  
35 188 the final sample.  
36 189

### 37 190 **Patient and public involvement**

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3 191 As the interviews focused on HCPs beliefs and attitudes, patients were not directly involved in the  
4  
5 192 design or administration of this research.  
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7 193

### 8 194 **Data Analysis**

9  
10 195 Interviews were audio recorded and transcribed verbatim. NVivo software was used to facilitate data  
11  
12 196 analysis. Thematic analysis as described by Braun and Clarke, 2006 was used to analyse the data [37]. An  
13  
14 197 inductive approach was used, where; transcripts were read and open-coded. These codes were grouped  
15  
16 198 according to HCPs beliefs and attitudes, their approach to weight management and the reasons for this  
17  
18 199 approach. Codes, and categories were discussed and sub-themes were synthesised and organised to  
19  
20 200 develop broader themes (CF and SMH). The data were analysed independently by one researcher (CF)  
21  
22 201 with a subset of the transcripts dual coded (CF and SMH). To ensure the consistency of the findings an  
23  
24 202 audit trail was kept for transparency in the analysis. Hospital based HCPs and GPs were reported as HCPs  
25  
26 203 when similar views and attitudes were expressed. Differences between hospital based HCPs and GPs  
27  
28 204 were also recorded. The consolidated criteria for reporting qualitative research (COREQ) statement was  
29  
30 205 used to inform reporting of the findings (Supplementary File 2).  
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32 206

### 30 207 **RESULTS**

31  
32 208 Thirty-six HCPs were invited; seventeen participated (hospital based n=10) and (GPs n=7). The 17  
33  
34 209 interviews were analysed chronologically. With no new themes emerging it was agreed that no more  
35  
36 210 interviews were required. Table 1 provides details of the participants' characteristics including gender,  
37  
38 211 occupation and location of practice. The interviews for hospital based HCPs ranged from 23 to 50  
39  
40 212 minutes in duration and GP interviews ranged from 14 to 35 minutes.  
41  
42 213

42 214 **Insert Table 1 here**  
43  
44 215

45 216 Four major themes were identified that relate to HCPs attitudes and approaches to weight  
46  
47 217 management: the *"softly-softly" approach to weight management; "doing what you can with what you*  
48  
49 218 *have", shifting the focus to the management of obstetric complications and unclear roles and*  
50  
51 219 *responsibilities for lifestyle advice*. Together these four themes reflect the complexity of weight  
52  
53 220 management and how hospital based HCPs and GPs discuss and approach weight management.  
54  
55 221 Furthermore, HCPs describe the constraints within the system and highlight their attitudes to weight  
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57 222 during pregnancy. Hospital based HCPs and GPs shared similar views in terms of weight management,  
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223 with differences emerging on issues such as weighing practices and concerns about who is ultimately  
224 responsible for the management of overweight and obese pregnant women. The themes are presented  
225 in Figure 1.

227 **Insert Figure 1 here**

### 229 **The “softly-softly” approach to weight management**

230 Hospital based HCPs and GPs identified the tension between attitudes towards weight at a population  
231 and individual level. At the population level, concerns were clear about the dramatic increase in  
232 maternal obesity and the attitude that *‘being overweight is fine...people look at themselves and say,*  
233 *“Well, I’m just the same size as her.” or “I’m thinner than her”, therefore, I’m not overweight*  
234 *(Obstetrician 03)*. Furthermore, socialisation and family norms have resulted in unhealthy learned  
235 behaviours and an environment in which obesity is now acceptable; *“we’re normalising obesity, it’s not*  
236 *perceived as a problem” (GP 05)*. Despite this, at an individual level when managing maternal obesity,  
237 HCPs recognised the presence of stigma relating to weight and obesity. As a result, a *“softly-softly”*  
238 *approach to weight management* among overweight and obese pregnant women was adopted.

240 *“...we have a very softly-softly approach to obesity and overeating and over nourishment...”*  
241 *(Obstetrician 07)*

243 This cautious and diplomatic approach involved trying to strike a balance between being empathetic  
244 towards the women, medicalising the issue and acknowledging their duty as HCPs to inform the woman  
245 about the risks associated with overweight and obesity. This approach was used to raise and address the  
246 topic of weight throughout pregnancy.

248 The approach depended on how the women reacted to initial attempts to discuss weight and thus  
249 varied across women. In participants’ experience, most women reacted negatively to the topic of weight  
250 and obesity in pregnancy; they disengage, the shutters come down, they can get a bit defensive or  
251 dismissive of it and thus it’s not a two-way interaction.

253 Hospital based HCPs and GPs were conscious of the patient experience and that their professional role  
254 required them to be sensitive, non-judging, encouraging, motivating and to act as a counsellor for each

1  
2  
3 255 of their overweight patients. They were concerned about using the right language so as not to cause  
4  
5 256 offence, anger or upset and they acknowledged that you cannot use the word “fat”. However, in some  
6  
7 257 cases HCPs highlighted the need to be upfront and blunt to get the message across. Hospital based HCPs  
8  
9 258 also recognised the need to be clear, to state the facts and to be honest with the woman as it is their  
10  
11 259 responsibility to help the woman manage her weight.

12 260  
13 261 *“No, I think we need to find a way of getting that message across and I think part of that is just*  
14  
15 262 *normalising it...we’ve got to normalise chatting about weight...I’ve tried a whole range of*  
16  
17 263 *different ways and sometimes it’s regarded as confrontational and I can feel that they’re looking*  
18  
19 264 *at me thinking, “Well, I don’t like that doctor.” It’s not that I’m trying to make her feel bad, I*  
20  
21 265 *want to point this out and I try and medicalise it and say, “Well, you know your body mass index*  
22  
23 266 *is over 30, that means you’re obese, that puts you at risk of high blood pressure, diabetes”*  
24  
25 267 *(Obstetrician 03)*

26  
27 269 Broaching the subject of weight

28  
29 270 Hospital HCPs and GPs felt the need to adopt a “softly-softly” approach in relation to the topic of weight  
30  
31 271 compared to a more direct approach they might take with issues such as blood pressure. Raising the  
32  
33 272 subject of weight was influenced by confidence and experience. Some HCPs considered themselves  
34  
35 273 experienced enough to discuss “uncomfortable truths” about obesity such as potential complications.  
36  
37 274 Others found it difficult to broach the subject; in particular hospital based HCPs such as junior midwives  
38  
39 275 found raising the topic awkward. To facilitate the conversation, more experienced hospital based HCPs  
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41 276 drew on their personal weight issues to relate to the women.

42 277  
43 278 *‘...I’m not the skinniest person in the world. I think it’s easier when you can say, “Look, we all*  
44  
45 279 *have our challenges and you’ve got to work hard at it” (Obstetrician 06)*

46 280  
47 281 More detached approaches were also described; with hospital based HCPs using tools such as a BMI  
48  
49 282 categorisation tool to frame the conversation because using BMI “isn’t as upsetting to somebody as if  
50  
51 283 you said, You’re fat.” (Midwife 01). Furthermore, because of women’s weight, difficulties were often  
52  
53 284 experienced when palpating a woman’s abdomen and conducting fetal scans, offering an opportune  
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55 285 situation to raise the issue and to discuss the potential complications.

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3 287 *"I actually say it straight out to them when I am scanning, look unfortunately you carry the extra*  
4 *adipose tissue I am finding it difficult , there is too much fat around you abdomen which you*  
5 288 *need to watch. I would say that straight-out..." (Midwife 01)*  
6  
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10 291 All HCPs acknowledged that conversations about weight occur frequently throughout pregnancy as they  
11 292 have continuous contact with pregnant women. However, these discussions were quick conversations  
12 293 due to large caseloads, time and due to the number of topics that needed to be addressed within the  
13 294 consultations. *"it would be a couple of minutes given to a discussion about their weight and the*  
14 295 *problems with it..." (Obstetrician 09)*  
15  
16 296

### 20 297 **"Doing what you can with what you have" to support the management of overweight and obesity**

21 298 In the current *"obesogenic environment"* HCPs faced numerous challenges when supporting women to  
22 299 manage their weight. It was identified that the woman's health, their level of risk in pregnancy and  
23 300 scarce resources dictated what HCPs could do to support women's weight management efforts.  
24  
25 301

26 302 Hospital based HCPs were adapting the evidence to deal with large caseloads of women with high BMIs  
27 303 *"...so we don't talk about weight to the women who are overweight, we save that for the women who*  
28 304 *are obese..."(Obstetrician 03)*. Due to scarce resources, priority was given to the obese women rather  
29 305 than overweight women: *"we have far too many women with BMIs in the 40s or even in the 50s in whom*  
30 306 *we focus our limited resources" (Obstetrician 03)* therefore, women with a BMI  $\geq 25$  *"doesn't raise as*  
31 307 *much of a red flag"*. Limited dietetic services within the hospital were discussed as an example of the  
32 308 inadequate resources, with this service only offered to those with a diagnosis of GDM. This reflected the  
33 309 *"doing what you can with what you have"* approach as hospital based HCPs could do more for these  
34 310 pregnant women. Hospital based HCPs emphasised that this service needed to reach all women,  
35 311 particularly overweight and obese women (without GDM) who could benefit from that type of  
36 312 intervention. Also, access to dietetics influenced GPs' management of weight; long waiting times for  
37 313 referrals meant that they lost that window to intervene with the woman.  
38  
39 314

40 315 Most hospital based HCPs did not have any *'specific written guidelines'* to follow while others described  
41 316 using and applying varying ranges of weight gain in pregnancy. A BMI  $\geq 30\text{kg/m}^2$  was so common, it was  
42 317 considered a low priority for services, management and advice rendering some guidelines *'inadequate'*.  
43  
44 318

1  
2  
3 319 *'I think the guidelines and the public health policies that are out there are inadequate.....they're*  
4 *certainly not permeating into a lot of healthcare professionals' consciousness and I think many*  
5 320 *doctors don't regard a BMI of 30 [as priority] because it's becoming more and more common'*  
6 321 *(Obstetrician 07)*  
7  
8 322  
9

10 323  
11 324 The 'doing what you can with what you have' approach to weight management was also reflected in  
12 325 weighing practices and attitudes towards weighing. Weighing practices varied amongst the HCPs and  
13 326 there were divergent attitudes towards its usefulness and appropriateness. GPs highlighted that the  
14 327 evidence and guidelines no longer recommend weight as a 'clinical indicator'.  
15  
16 328

17  
18 329 *'...it was stopped being done as routine because it wasn't correlating with health outcomes.*  
19 *That's my understanding of it, but I certainly would be interested to see if there are new*  
20 330 *guidelines about it. So if it is significant, I think it should be included in the chart...'* (GP 03)  
21  
22 331  
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24 332

25  
26 333 However, hospital based HCPs such as midwives were keeping track of women's weight, particularly at  
27 334 the booking visit and again at 28 weeks. Weight and BMI was used in the hospital to refer women for  
28 335 anaesthetic assessment to determine the woman's 'anaesthetic risk'.  
29  
30 336

### 337 **Shifting the focus to the management of obstetric complications**

338 The risk of obstetric complications at any stage in pregnancy takes precedent over efforts to manage  
339 weight with hospital based HCPs acknowledging "it's too late [to manage weight] at that stage". For  
340 hospital based HCPs, weight management was superseded when obstetric complications arose. At this  
341 point the woman's complications required obstetric care, shifting the focus to the immediate health of  
342 the woman and baby.  
343

344 *"If they develop hypertension, I talk about hypertension and the treatment of. It's very difficult*  
345 *at that point, they're now hypertensive, the baby's at risk of growth restriction, they're at risk of*  
346 *early delivery, we need to get their blood pressure under control, take care of the maternal*  
347 *problems and make sure the foetus is okay. It's too late at that stage to start going, "Oh well,*  
348 *you have this now because you're fat." no, it's too late"* (Obstetrician 03)  
349

### 350 **Unclear roles and responsibilities for lifestyle advice**

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2  
3 351 In the context of shared maternity care, HCPs highlighted the challenge of providing continuity of care  
4  
5 352 and questioned who is ultimately responsible for managing weight. It was difficult for hospital based  
6  
7 353 HCPs to provide continuous weight management and advice as they had limited opportunity to follow  
8  
9 354 up with the same women. Therefore, responsibility of continuous care fell to the GPs. Hospital based  
10  
11 355 HCPs suggested the GP would have a better family picture and would have the opportunity to engage  
12  
13 356 with these women on numerous occasions preconception and throughout pregnancy.  
14

15 358 *“I think there GP should be one that keeps an eye on it [weight], he is the continuous person*  
16  
17 359 *that’s with them” (Midwife 01)*  
18

19 360  
20 361 In contrast, GPs tended to put onus on the hospital based HCPs, reporting *“Oh well look, the hospital will*  
21  
22 362 *take care of that” (GP 05)* or we are very stretched in general practice. Even though both hospital based  
23  
24 363 HCPs and GPs are taking part in shared antenatal care, GPs felt there was little communication between  
25  
26 364 primary and secondary care and more clarity was required around role responsibilities and expectations  
27  
28 365 within the shared care setting. This would ensure that weight related conversations were consistent and  
29  
30 366 reliable.  
31

## 32 368 **DISCUSSION**

33 369 This qualitative study demonstrates the challenges surrounding weight management during pregnancy  
34  
35 370 for overweight and obese women from the perspective of hospital based HCPs and GPs with more  
36  
37 371 concerns for women in the higher BMI categories. Four major themes were identified: the *“softly-softly”*  
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39 372 *approach, “doing what you can with what you have”, shifting the focus to the management of obstetric*  
40  
41 373 *complications, and unclear roles and responsibilities for lifestyle advice.* These themes reflect how HCPs  
42  
43 374 discuss and manage weight, and the challenges they face when trying to balance the medical and  
44  
45 375 psychosocial needs of the women.  
46

47 377 The *“softly-softly”* approach is defined as cautious and patient and avoids direct action or force which  
48  
49 378 reflects HCPs accounts of their approach to providing care for overweight and obese pregnant women.  
50  
51 379 Similar to this study, previous research identified an increased acceptance of obesity within the  
52  
53 380 population [26, 38-40] with fewer people now defining themselves as overweight and obese and  
54  
55 381 underestimating their weight status [38, 39, 41]. Furthermore, stigma in relation to obesity was also  
56  
57 382 present in this study and in previous research with HCPs feeling the discomfort and awkwardness  
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383 around weight conversations in pregnancy [40]. A lack of confidence and experience determined the  
384 approach used to broach the subject of weight, with younger midwives in particular finding the topic  
385 awkward. This is supported by existing literature, with junior HCPs having negative opinions about their  
386 skills for treating obese patients [28, 42, 43]. Hospital based HCPs and GPs in this study were aware that  
387 weight needs to be addressed with care, to avoid upsetting the women. Similarly, in other studies, HCPs  
388 were concerned about victimising the women or jeopardising their relationship with the women when  
389 raising the subject of weight [26, 28, 33]. Midwives tried to broach the subject of weight by discussing  
390 their own weight loss journeys. In contrast, a study exploring the experiences of HCPs found that HCPs  
391 with high BMIs felt they were not in a position to address weight and therefore veered away from the  
392 conversation [42]. Standardised questions could be used with all pregnant women to reduce stigma  
393 associated with the conversation of weight and increase HCPs' confidence [44]. Experienced, well-  
394 informed HCPs need to share their training, knowledge and experience with more junior staff, including  
395 prompts and communication strategies, in order to improve addressing the subject of weight [31].  
396 Scarce resources determined HCPs' approach to managing weight, particularly dietetic services which  
397 were consequently limited to women with GDM. Similarly, previous research identified limited  
398 resources available within maternity units as a barrier to managing weight during pregnancy [26, 40].  
399 With a number of diet and physical activity interventions reducing GWG and GDM [17, 19, 45], it is clear  
400 that services such as dietetics need to reach all women, particularly women with a BMI  $\geq 25\text{kg/m}^2$ . As  
401 revealed in this study, HCPs had different views on routine weighing practices. Previous research  
402 indicated that while there are benefits to routine weighing, various challenges such as existing resources  
403 and time constraints need to be addressed in order to successfully implement the process of routine  
404 weighing of all women at every antenatal visit [46]. Furthermore, advice regarding the amount of weight  
405 to gain in pregnancy varied. This is perhaps not surprising as there is no formal guidance for appropriate  
406 GWG in Ireland. Previous research has demonstrated an evidence-practice gap relating to the  
407 provision of clinical care of overweight and obese pregnant women [47]. Similarly, in the UK, HCPs  
408 were unsure about appropriate GWG in pregnancy [27]. Evidence suggests that women who are not  
409 advised about appropriate GWG are more likely to gain outside the recommended ranges [48].  
410 Therefore, further research and national guidance is needed to address divergent opinions about the  
411 benefits of weighing practices and lack of clarity on appropriate GWG to support standardised shared  
412 antenatal care.

413

#### 414 **Strengths and limitations**



1  
2  
3 415 The inductive approach used in this qualitative study revealed the nuances and tensions involved in the  
4  
5 416 management of overweight and obese pregnant women. The recruitment of a diverse sample of HCPs  
6  
7 417 across settings, including hospital based HCPs and GPs with a range of experiences and specialities is a  
8  
9 418 further strength of this study. Most of the HCPs were recruited from a limited geographical area and  
10  
11 419 their perceptions and approach to weight management may not reflect those of HCPs working  
12  
13 420 elsewhere. Variation in interview length occurred due to constraints and demands on participants' time.  
14

421

### 422 **Practice Implications**

16 423 Hospital based HCPs and GPs are aware of the stigma around the topic of weight, particularly for women  
17  
18 424 with a BMI  $\geq 25\text{kg/m}^2$ . As part of encouraging healthy lifestyle choices, HCPs need to normalise the  
19  
20 425 conversation around weight. Other health behaviours such as smoking and alcohol are considered more  
21  
22 426 acceptable and easier to discuss [26], therefore HCPs need to approach weight conversations in a similar  
23  
24 427 manner. Training, education and skill development is required for HCPs to care effectively for these  
25  
26 428 women. Lack of continuity of care undermines the consistency of weight management conversations  
27  
28 429 and advice. Creating multidisciplinary teams or networks within the shared antenatal care setting would  
29  
30 430 enhance and encourage knowledge sharing between HCPs allowing for effective communication  
31  
32 431 between primary and secondary care. Furthermore, standardised approaches to weight management  
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34 432 are needed and where possible, HCPs need to follow women during pregnancy to build rapport and  
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36 433 ensure consistent information throughout. To address the sensitive nature of weight conversations, the  
37  
38 434 most important question for HCPs is to ask how a patient feels about their weight in pregnancy.  
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40 435 Negative reactions will alert HCPs that additional support may be required. Additionally, motivational  
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42 436 interviewing could be used; this has been previously identified as an effective strategy when  
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44 437 approaching sensitive issues such as obesity [49].  
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### 439 **Conclusion**

45 440 Building rapport is necessary to deal with the sensitive nature of weight which requires consistent  
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47 441 contact and guidance from HCPs. Roles and responsibilities for weight management within shared care  
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49 442 needs to be clearer in this "*obesogenic environment*". By ensuring hospital based HCPs and GPs have the  
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51 443 confidence, knowledge and opportunity to discuss weight and lifestyle factors with pregnant women,  
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53 444 the women in turn may initiate or maintain healthy behaviours during pregnancy. Within shared care,  
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55 445 evidence-based guidelines that support the consistent monitoring and management of weight during  
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57 446 pregnancy could improve care and outcomes for these women.

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5 448 **FIGURE LEGEND**6 449 **Figure 1: Drivers and approach to weight management for overweight and obese pregnant women**7  
8 4509  
10 451 **Supplementary data:**

11 452 File 1: Topic Guide

12 453 File 2: COREQ Statement

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14 45415  
16 455 **Ethical approval and consent to participate**17  
18 456 (CF) confirms that all patient identifiers have been removed so the patients described are not  
19 457 identifiable and cannot be identified through the details of the story. Ethical approval was obtained  
20 458 from the University College Cork Clinical Research Ethics Committee of the Cork Teaching Hospital (ref:  
21 459 ECM 4 (y) 06/01/15). Written informed consent was obtained from all participants.  
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27 461 **Conflict of interest**

28 462 The authors declare that they have no competing interests.

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30 46331  
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36 468 and then used in policy and practice. In doing so, the HRB support health system innovation and create  
37 469 new enterprise opportunities.  
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43 471 **Author's contributions**44 472 CF, SMH, PK and MB conceived and designed the study. CF, SMH developed the topic guide and study  
45 473 protocol. CB facilitated access to GPs for recruitment to the study. CF conducted and transcribed the  
46 474 interviews. CF and SMH coded the transcripts, developed and refined the themes. CF wrote the first  
47 475 draft of the paper. All authors (SMH, LK, MOR, FMA, CB, PMK and MB) contributed to successive drafts  
48 476 and read and approved the final manuscript  
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5 480 who participated in this study.

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8 482 **Data sharing statement**

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10 483 No additional data are available  
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**Table 1: Profile characteristics of HCPs (N=17)**

	Male	Female
<b>Occupation</b>		
Midwife <sup>A</sup>	-	4
SHO Senior House Officer	-	1
Consultant Obstetrician <sup>B</sup>	2	3
General Practitioners	3	4
<b>Location</b>		
Cork	4	12
Kerry	1	-

<sup>A</sup> Midwife working in diabetic clinic (n=1); labour ward (n=1); outpatient department (n=2)

<sup>B</sup> Obstetrician's working in obstetrics with sub-specialist interests such as maternal medicine, high risk pregnancies, fetal medicine and complicated pregnancies (n=4); gynaecology (n=1)

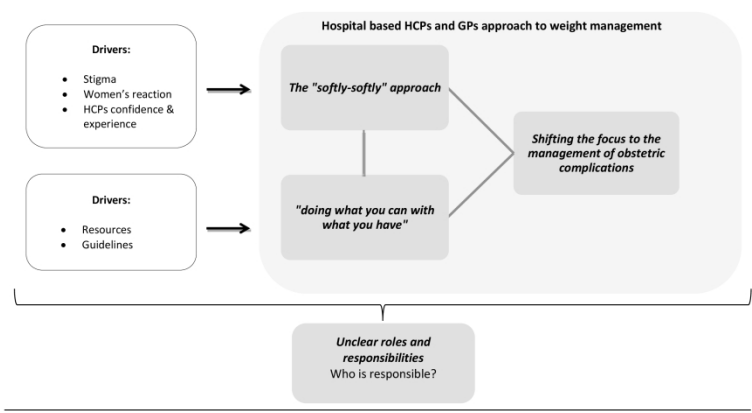


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Figure 1: Drivers and approach to weight management for overweight and obese pregnant women



HCPs, health care professionals; GPs, general practitioners

297x209mm (300 x 300 DPI)

Table S1: Topic Guide

	Questions	Prompts
Intro	Tell me a bit about what you do here in CUMH	Types of pregnant women Stage of pregnancy (booking visit, delivery)
	When you see an OB woman for the 1 <sup>st</sup> time during pregnancy, what usually happens?	What does the assessment/visit involve? Do you weigh them? What do you talk about? How do you think that information is usually received? What issues does the woman usually raise? Topics covered: diet, exercise, nausea, cravings
Usual Care	Can you tell me a bit about the last women you saw?	What stage of pregnancy? When was this? Describe the mother... What did you talk about? What issues did she raise? Topics: diet, PA, nausea, cravings...
	Do you discuss the woman's weight specifically?	Tell me about that... - Appropriate weight gain - How do you judge (guidelines) - Do you know what advice to give?
	Having the conversation	How do you feel talking about weight and obesity? How is it received? (upset, shock, embarrassment) How could this conversation be made easier? (for you/the woman)
	And what about PA, would that come up?	- Women previously exercising? - Types of PA?
	How are these issues followed up during pregnancy?	If a woman is gaining EGW, what would you do?
	To what extent do resources influence your visit with an OB pregnant woman?	- Time available - Access to equipment (weighing scales) - Ability to refer to dietician - Patients co-operation
	Can you think of times where women have made positive life style changes during pregnancy? And those who haven't made any changes, what were the barriers?	Tell me about that... Motivations, Supports, Outcome Any targeted support available? - Dietetic services, exercise programmes, weight management programme. - Women's perceptions of PA (benefits)
	What do you think would help these women to change their behaviour during pregnancy?	Have you seen technology being used to support BC? - What kind, features, - Did someone recommend it? - What information was it providing to women? What about mobile phone apps, text message/phone, web based information forums, pedometer? Would these support mechanisms be useful? - If it provided you with information as well
	Any other comments or suggestions on how behaviour change could be supported during pregnancy?	- Individual meetings - Group peer led sessions

CUMH, Cork University Maternity Hospital; OB, overweight and obese; PA, Physical activity; HCP, Health care professional; EGW, Excessive gestational weight; BC, Behaviour change

**Table S2: Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist**

Developed from:

Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page no.
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	5
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1
3. Occupation	What was their occupation at the time of the study?	1
4. Gender	Was the researcher male or female?	1
5. Experience and training	What experience or training did the researcher have?	5
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	5
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	5
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	1, 5
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	5, 6
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	5
12. Sample size	How many participants were in the study?	6
13. Non-participation	How many people refused to participate or dropped out? Reasons?	6
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	5, 6

15. Presence of non-participants	Was anyone else present besides the participants and researchers?	n/a
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	6, 20
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	5, 6
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	n/a
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	6
20. Field notes	Were field notes made during and/or after the inter view or focus group?	Yes
21. Duration	What was the duration of the inter views or focus group?	6
22. Data saturation	Was data saturation discussed?	6
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	6
25. Description of the coding tree	Did authors provide a description of the coding tree?	n/a
26. Derivation of themes	Were themes identified in advance or derived from the data?	6
27. Software	What software, if applicable, was used to manage the data?	6
28. Participant checking	Did participants provide feedback on the findings?	n/a
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	6-11
30. Data and findings consistent	Was there consistency between the data presented and the findings?	6-11
31. Clarity of major themes	Were major themes clearly presented in the findings?	6-11
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	6-11

Once you have completed this checklist, please save a copy and upload it as part of your submission. When requested to do so as part of the upload process, please select the file type: **Checklist**. You will NOT be able to proceed with submission unless the checklist has been uploaded. Please DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.