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1 **Factors influencing engagement in postnatal weight management and subsequent** 2 **weight and well-being outcomes.**

3

4 **Abstract**

5

6 Many women exceed gestational weight gain recommendations. Successful postnatal weight management
7 decreases the risk of entering further pregnancies obese. This service evaluation investigates women's
8 motivations to lose weight postnatally, the weight loss achieved and impact on self-esteem.

9 **Methods:** online survey using quantitative questions to determine motivation and lifestyle behaviours
10 related to post-natal weight management in women attending a commercial weight management
11 organisation. Weekly weights confirmed from digitally recorded data.

12 **Results:** 1015 responded. Mean joining BMI was $33.3\text{kg/m}^2 \pm 5.85$ and when surveyed $30.5\text{kg/m}^2 \pm 5.86$, a
13 change of $-2.8 \pm 0.1 \text{ kg/m}^2$ ($p < 0.01$, 95% CI 2.76 – 3.11). 463 (45.7%) joined the groups between 6-26 weeks
14 postnatal. Main motivators to lose weight were 'to improve how I feel about my body size and shape' (85.2%)
15 and 'improve self-confidence' (76.6%) although only 'to improve my health' (65.6%) correlated with actual
16 weight loss (0.114, $p < 0.01$). Healthcare professional recommendation was less of a reason (6.5%).
17 Improvements in self-confidence (77.6%), self-esteem (78.6%), wellbeing (85.2%) and body size/shape
18 (70.1%) were reported.

19 **Conclusion:** Women chose to engage to improve self-confidence, feelings about their body shape and health.
20 There is an opportunity for healthcare professionals to encourage women early after giving birth to engage
21 in weight loss and this may improve outcomes.

22

23

24 **Introduction**

25 Of the four million women who give birth in the United States each year, almost 30% gain more weight than
26 recommended by the Institute of Medicine guidelines (IOM, 2009). It has been established for many years
27 that pregnancy may lead to subsequent weight problems. In the Stockholm Pregnancy and Women's
28 Nutrition (SPAWN) longitudinal study weight retention at the end of the postpartum year was the main
29 predictor of being overweight 15 years later (Linné et al., 2004).

30 In the UK, 24% of women of reproductive age are now obese and the prevalence is predicted to increase
31 (Butland et al., 2007). Maternal obesity increases health risks for mother and child both during and after
32 pregnancy including hypertensive disorders, thromboembolism, gestational diabetes mellitus, induction of
33 labour, prolonged delivery, caesarean section, postpartum haemorrhage and either low birthweight or
34 macrosomia in the infant (Scott-Pillai et al, 2013). The more weight gained during pregnancy, the more likely

35 that it may be retained postpartum (Johnson et al., 2013). Women who enter a subsequent pregnancy
36 overweight or obese also have a higher risk of adverse outcomes for themselves and/or their infants.
37 Given the antenatal period involves regular contact with healthcare professionals, pregnancy may be
38 considered as an opportune time to encourage weight management and prevent excess weight gain and thus
39 prevent the vicious circle of weight accumulation across successive pregnancies and associated health risks.
40 However the majority of obese women taking part in either semi-structured interviews or focus groups in
41 London felt that pregnancy was not the best time to address weight (Khazaezadeh et al., 2011). General
42 concerns about pregnancy and complications were felt to be the priority. Instead those interviewed reported
43 that the motivation for weight management efforts would be higher following childbirth or prior to
44 conception (Khazaezadeh et al., 2011). This finding is reinforced by Hodgkinson and colleagues (2014), where
45 it was concluded that postpartum is a period where women need more support.

46 UK NICE public health guidance (NICE, 2015) for supporting women after childbirth currently recommends
47 health professionals use the 6–8-week postnatal check, or during a follow up appointment within the next 6
48 months, as an opportunity to discuss a woman's weight and to offer support and up-to-date advice about
49 how to lose weight safely after childbirth. The NICE guidance recommends that during the follow-up
50 appointments, breast feeding should be encouraged along with a healthy diet and building moderate-
51 intensity physical activity into daily life. Women with a BMI>30kg/m² should be made aware of the increased
52 risks that being obese poses to them and encouraged to lose weight via a structured weight-loss programme.
53 Successful weight management in the period following child birth not only decreases the risk of entering
54 further pregnancies overweight or obese, but also has the potential to reduce long term health risks such as
55 heart disease, obesity, cancer, cardiovascular disease, type 2 diabetes (Scott-Pillai et al., 2013).

56 It is widely accepted that new mothers experience huge changes in lifestyle once they have given birth and
57 there is a tendency for new mums to put their health second to their child. Previous evidence has identified
58 a number of barriers that prevent women from successfully engaging in postnatal weight management
59 including lack of time, changes in body image, depression, lack of motivation, lack of support (Montgomery
60 et al, 2011), but with little knowledge available as to what might increase motivation levels.

61 Previous trials have assessed different approaches to weight management in the postnatal period but
62 evidence regarding the most effective method is still lacking, with uncertainties surrounding the optimal
63 method and recruitment stage (van der Plicht et al., 2013).

64 Group based commercial weight management (CWM) interventions are successful when implemented in the
65 general population (Stubbs et al., 2011) and are currently recommended in the UK (NICE, 2014).The CWM
66 organisation Slimming World (SW) has worked in partnership with the Royal College of Midwives to develop
67 a policy to support women to manage their weight through all stages of pregnancy and postpartum, including
68 whilst breast-feeding. The multi-component group-based programme, including behavioural change

69 strategies, emphasises the importance of maintaining a healthy diet that is varied and flexible and being
70 physically active, detailing the benefits to mother and baby.

71 The aim of this service evaluation was to investigate member motivations to lose weight postnatally, to
72 consider the barriers and to determine the weight loss achieved and impact on wellbeing, confidence, self-
73 esteem and body image through an online survey to continually improve the support offered.

74

75 **Materials and Methods**

76 An online survey was hosted on the group member's only section of the SW website during September 2013
77 and advertised to current members who had given birth in the last 2 years. The survey was specifically
78 developed for this service evaluation, with the intention being easy to complete and in language with which
79 the participants in the SW programme were familiar.

80

81 The survey consisted of 36 questions, participants were asked to select from a drop-down menu to describe
82 age, height, date of birth, parity, breast-feeding status, duration of membership and the amount of weight
83 gained during the most recent pregnancy. Weight at the time of survey and on joining the programme was
84 confirmed from the weekly weight data electronically recorded during group sessions as part of each
85 participant's membership. The same calibrated scales were used each week at a given group to record weight
86 and weight change. Weight data was screened for outlying data and BMI changes were calculated using the
87 confirmed weight data and self-reported heights.

88

89 The remainder of the questionnaire took the form of 5-point Likert scales, checkboxes or multiple choice
90 where one or more options could be ticked as appropriate to determine motivation and lifestyle behaviours.

91 The survey asked questions on motivations to join SW; changes in self-confidence, self-esteem, wellbeing,
92 body shape and image before and since joining SW; how long after giving birth participants joined and did
93 having a baby contribute to the decision; if breastfeeding; barriers to attending group; how easy it was to
94 attend group and benefits from attending. The questionnaire was constructed and administered using
95 Checkbox v4.4-Web Survey Software Copyright 2007, Prezza Technologies, Inc.

96

97 *Participants*

98 Members, irrespective of starting BMI, were only invited to complete the survey if they had given birth in the
99 last 2 years and they had joined SW after having their baby (i.e. weren't attending before becoming pregnant
100 or whilst pregnant) and were not currently pregnant. Members were provided with online information about
101 the study prior to partaking and were informed that by completing the survey they were voluntarily
102 consenting to participate in the study. As part of the membership contract it is clear that unidentifiable
103 personal weight data may be used for service evaluation purposes. The work was carried out in accordance
104 with the principles set out in the Code of Ethics according to the Declaration of Helsinki (1964).

105

106 *Statistical Analysis*

107 Data analysis was performed using SPSS for windows (version 21, SPSS Inc., Chicago, IL) and Microsoft Excel
108 (Microsoft Corp, Redmond, WA, USA). Descriptive data is summarised as frequency, mean \pm standard
109 deviation and percentages of participants responding to each question or sub-question where indicated. Data
110 was analysed using paired t-tests to determine significant differences between weight reported at baseline
111 and at the time of survey. Pearson's r-Correlation, following adjustment for length of membership, was used
112 to determine the relationship between motivations for weight loss and actual weight loss as a result of
113 attending the weight management programme.

114

115 **Results**

116 *Participant Characteristics*

117 1015 women responded, mean age was 32.2 ± 5.1 (range 18-45) years. Mean parity was 1.8 ± 0.9 , with a
118 range between 1 and 5+ children.

119 Mean BMI (n=971) on joining was 33.3 ± 5.8 kg/m² and at the time of the survey 30.5 ± 5.9 kg/m² representing
120 a BMI change of -2.8 ± 0.2 kg/m² (p < 0.01, 95% CI 2.76 – 3.11). Weight change was significantly different
121 between joining weight (baseline) and weight at time of survey, with an 8.6% mean weight loss reported ($-$
122 7.9 ± 0.05 kg) (p < 0.01). Figure 1 shows the absolute weight changes dependent on the length of time the
123 women were attending the weekly groups.

124 At the time of survey, current duration of membership varied between participants, 52.5% (533) reported
125 being members for less than 3 months, 22.4% (n=227) members for 3-6 months, 15.7% (n=159) members for
126 7-12 months, 6.2% (n=63) members for 13-18 months and 3.2% (n=33) for 19 months to 2 years. Figure 1
127 illustrates a positive association between duration of attendance at the groups and mean amount of weight
128 loss achieved up to 19-24months group membership.

129

130 Participants reported joining the weight management programme at a variety of time points after having
131 their baby (Figure 2). 45.7% (n=463) started attending the weight management programme between 6-26
132 weeks postnatal and 23.4% (n=238) commencing > 1 year postnatally.

133

134 Over 75% (n=780) stated they had retained more than one stone (6.4kg). 60.9% (n=619) agreed that having
135 a baby contributed to their decision to join SW with 51.3% (n=521) reporting that gaining weight during their
136 pregnancy affected their self-esteem.

137

138 62.8% participants reported breastfeeding their most recent child (n=626), with the length of breastfeeding
139 varying between responders, 10.4% (n=66) between 0-1 week, 14.9% (n=93) between 1-3 weeks, 16.9%
140 (n=106) between 4-6 weeks, 11.5% (n=71) between 7-12 weeks, 7.6% (n=47) between 3-4 months, 4.9%

141 (n=31) between 4-5 months, 9.5% (n=59) between 5-6 months, 15.1% (n=96) between 7-12 months and 8.9%
142 (n=57) 12 months.

143

144 A sub-analysis was performed to compare current weight loss recorded from electronic records, with start
145 date of joining the CWM programme (when adjusted for membership length) to identify if time of
146 commencing a weight management programme affected weight loss outcomes. This analysis indicates that
147 participants who engaged in the weight management service between 6-12 weeks postnatal, recorded
148 greater weight-losses than those who engaged 41-52 weeks or >1 year postnatal ($P<0.05$) (Figure 3).

149

150 *Motivations for weight loss*

151 Participants were asked to select all applicable reasons why they decided to lose weight from a series of
152 statements. The results indicate the main motivations were 'to improve how I feel about my body size and
153 shape' (85.2%, n=865), 'to improve my self-confidence' (76.6%, n=777), and 'to lose the weight I gained
154 during my pregnancy' (66.5%, n=675). Social pressure (8.6%, n=87), media pressure and celebrity culture
155 (3.9%, n=40) were reported less frequently as a contributing factor to wanting to lose weight postnatally
156 (Table 1). Reasons for deciding to lose weight were correlated with actual weight loss to determine if initial
157 intentions to lose weight transferred into reported weight loss: only 'to improve health' was positively
158 correlated, with 'to lose baby weight before having another baby' negatively correlated to weight loss (Table
159 1).

160

161 *Wellbeing, self-esteem, confidence and body image*

162 51.3% (n=521) of participants reported that weight gain during pregnancy had affected their self-esteem,
163 rising to 82% (n=835) when retaining weight after pregnancy. Participants also reported how they felt their
164 self-esteem, self-confidence, general wellbeing, confidence in body weight and size had been affected since
165 joining CWM group and if they felt under social or media pressure to be an ideal weight following their
166 pregnancy (Table 2). Participants reported improved self-confidence (77.6%), improved self-esteem (76.6%),
167 improved sense of wellbeing (85.2%) and felt more confident in their body shape and size (70.1%). 39.6% of
168 responding participants disagreed, 31.0% agreed and 29.4% neither agreed nor disagreed with the statement
169 that they felt under social or media pressure to be an ideal weight following their pregnancy (Table 2).

170

171 *Practicalities to taking part in the weight management programme*

172 Participants were asked to report on the practicalities of attending the CWM group as a member after having
173 a baby. Participants reported their group location (n=896, 88.2% agree quite a lot or very much) and time
174 (n=846, 82.3% agree quite a lot or very much) was convenient for them. In addition, of those who took their
175 children and or buggy's to a Slimming World group, over 70% reported their group to be child (74.6%, n=564)
176 and buggy friendly (73.3%, n=545).

177

178 **Discussion**

179 The aim of the current investigation was to determine the motivations for losing weight in the postnatal
180 period, investigating the impact of social pressure and exploring the effect the weight management
181 programme had on their health, confidence, self-esteem and body image, well-being and weight. Almost half
182 of the respondents had been members for more than three months and significant mean weight losses were
183 achieved. The results indicate obese women engage in weight management programmes at various times in
184 the postnatal period, from as early as 6 weeks to over a year afterwards, with almost half of the respondents
185 having been members for more than three months. The results suggest they want to lose weight and thus
186 engage in the programme to improve how they feel about their body shape and size, their health, and their
187 self-confidence and to lose the weight gained during their pregnancy. Whilst body shape and size, improving
188 self-confidence and losing the weight gained during pregnancy were the strongest motivators reported,
189 improving health was the only motivator which was significantly positively correlated to actual weight loss.
190 The results also indicate that a health professional recommendation currently plays a very minimal role in
191 motivating a woman to lose weight. This could be as a result of health professionals not fully understanding
192 the importance of postnatal weight management or there just being few opportunities where a health care
193 professional is currently able to raise the issue and encourage women in the postnatal period to lose weight.
194 Currently the emphasis in the postnatal period tends to be on the health and well-being of the infant
195 ([Montgomery et al., 2011](#)). The low response rate highlights a need to further develop the role that health
196 professionals play in influencing the health of postnatal women. Only 17.8% of the study participants claimed
197 their motivation was to lose weight before having another baby.
198 The present survey reported 64.4% of members felt that joining a weight loss group at the right time was a
199 motivator to lose weight postnatally. This suggests there may be an opportune time to initiate a weight
200 management intervention in postnatal women. Current UK guidelines (NICE, 2010) recommend the 6-8 week
201 postnatal check as an ideal time to raise the issue of excess weight retained post-pregnancy and offer support
202 about how to lose weight. The findings from this evaluation support this recommendation.
203 Very few of the women cited media or social pressure as reasons for wanting to lose weight. This indicates
204 that although celebrity pressure may be one reason for making women feel they need to lose weight after
205 birth, it does not actually have a major influence on engagement in a weight loss programme.
206 It may be assumed (particularly by media or critics) that engaging in a weight loss programme may add to
207 the pressures of postnatal women, inducing feelings of low self-esteem or guilt that they 'need' to lose
208 weight. However the responses provided within the current survey demonstrate that the participants
209 actually had low self-esteem before they joined a SW group which may have been related to excess weight
210 gain during and weight retention after pregnancy and that their attendance and weight loss was associated
211 with an increased self-esteem, self-confidence and wellbeing.

212 The reported breastfeeding rates at 6 weeks and beyond are higher than current reported UK rates at 58.5%
213 vs 55% (NHS, 2015) which may reflect the additional benefits of social support and the improved self-esteem.
214 Previous evidence identified time and childcare as potential barriers to engaging in weight management
215 services (Montgomery et al., 2011) but responses from participants in the current survey suggest that the
216 weight management group location and time were convenient and child and buggy friendly.

217

218 *Limitations*

219 The survey relied upon retrospective self-reporting to establish the motivations for losing weight up to 2
220 years post birth and the survey only provides a snap shot of the potential motivators.

221 The self-reported increases in self-esteem and self-confidence may have been due to reasons other than
222 weight loss.

223 Despite the high number of responders reported in this survey, it is likely that this sample is a specific, self-
224 selected sub-group, who represent individuals that successfully engage in a commercial weight management
225 organisation. As such the responses may not represent all postnatal women attempting to lose weight or the
226 general population as a whole. The results therefore should be considered in the context in which they were
227 obtained and the population in which they represent.

228 In addition, a number of key distinguishable participant characteristics were not collected including ethnicity
229 and socio-demographic status. This information is of importance as social deprivation is highly associated
230 with obesity in pregnancy and motivators and barriers to losing weight postnatally may differ in these
231 populations. We were unable to adjust for the magnitude of weight gained during pregnancy in the statistical
232 analyses.

233

234 **Implications for practice**

235 Healthcare professionals need to seek every opportunity possible to encourage women in the early postnatal
236 period to lose weight, particularly if the woman is likely to become pregnant again. They should not be
237 concerned about increasing anxiety levels as encouraging women to engage in certain CWM programmes in
238 the postnatal period may increase levels of self-confidence and self-esteem. Encouraging women as early as
239 six weeks after giving birth may help to improve weight loss outcomes in the postnatal period.

240

241 **Conclusions**

242 This survey indicates that postnatal women with an overweight and obese BMI engage in a group based
243 weight management programme, due to more personal reasons around improving body shape and size,
244 health and self-confidence rather than as a result of media or celebrity pressure. Participants reported
245 concerns around retention of excess pregnancy weight gain affecting their self-esteem. However, engaging
246 in a CWM programme, using a multi –component behavioural approach, resulted in significant weight loss
247 and increases in self-esteem, self-confidence, wellbeing and body image. The groups were reported to be

248 very accessible in terms of location, time and child friendly. These results could have significant public health
249 implications for promoting suitable weight management interventions for postnatal women.

250

251 Ethics; The work was carried out in accordance with the principles set out in the Code of Ethics according to
252 the Declaration of Helsinki (1964).

253

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256 AA, JB, CP and JL designed the study. AA and SH completed the data analysis. AA and SH prepared and CP
257 and JL critically reviewed the manuscript.

258 Conflicts of interest; AA, alongside her academic position at the University of Nottingham also holds a
259 consultancy position at Slimming World. The survey was hosted by Slimming World. All authors received
260 some level of salaried payment by the organisation.

261

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316 **Table 1:** Reasons for wanting to lose weight and correlations with actual weight loss

	Frequency (%)	Correlation with weight loss
To improve how I feel about my body size and shape	865 (85.2)	.031
To improve my self confidence	777 (76.6)	-.016
To lose the weight I gained during my pregnancy	675 (66.5)	.002
To improve my health	666 (65.6)	.114*
It felt like the right time to lose weight	654 (64.4)	.056
To lose baby weight before having another baby	181 (17.8)	-.095*
Social pressure made me feel I was expected to lose weight	87 (8.6)	-.004
A health professional recommendation	66 (6.5)	.063
Media pressure and celebrity culture made me want to lose weight	40 (3.9)	-.008

317 *correlation is significant at the 0.01 level (2tailed)

318

319

320

321 **Table 2:** Wellbeing, confidence, self-esteem and body image since joining Slimming World

Frequency (%)	I have improved self confidence	I have improved self esteem	I have an improved sense of wellbeing	I have confidence in my body size and shape	I feel under social/media pressure to lose my baby weight
Strongly agree	402 (39.6)	402 (39.6)	490 (48.3)	408 (40.2)	127 (12.5)
Slightly agree	386 (38.0)	396 (39.0)	375 (36.9)	303 (29.9)	188 (18.5)
Neither agree nor disagree	202 (19.9)	193 (19.0)	131 (12.9)	234 (23.1)	298 (29.4)
Slightly disagree	18 (1.8)	15 (1.5)	12 (1.2)	42 (4.1)	156 (15.4)
Strongly disagree	7 (0.7)	9 (0.9)	7 (0.7)	28 (2.8)	246 (24.2)

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328 Figure legends;

329 **Figure 1:** Weight loss (kg) by membership duration of the CWM programme at time of survey

330 **Figure 2:** Self-reported joining week of all participants attending the weight management programme
331 postnatally.

332 **Figure 3:** Participant start date (week the participants joined the CWMP) and recorded weight loss (kg)
333 adjusted for membership duration at the time of survey.

334