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Understanding maternal dietary choices during pregnancy: The role of social norms and mindful eating

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ABSTRACT

Introduction: Serious health complications associated with excessive weight have been documented for pregnant women and their babies during pregnancy, birth and beyond. Whilst research has focused on identifying particular foods that can be either detrimental or essential for the developing baby, pregnant women's food choices are likely determined by broader considerations. This study examined social influences as represented in reports of descriptive and injunctive social norms related to healthy eating during pregnancy, and individual differences in mindfulness while eating, as important potential correlates of pregnant women's self-reported diet.

Methods: Pregnant women (N = 139) completed a questionnaire that measured self-reported consumption of healthy and unhealthy foods, descriptive and injunctive norms related to healthy eating during pregnancy and the Mindful Eating Questionnaire (MEQ). Hierarchical multiple regressions were conducted to assess the extent to which norms and mindful eating accounted for variance in consumption of both foods.

Results: No significant associations were observed between perceived social norms related to diet during pregnancy and self-reported dietary behaviour. Mindful eating was found to play a role in pregnant women's eating behaviour, with the awareness subscale of the MEQ significantly associated with healthy eating and the emotional subscale associated with unhealthy eating. Age was also associated with consumption of unhealthy foods; younger pregnant women reported consuming more unhealthy snacks and fast food meals.

Conclusions: The associations between mindful eating and dietary behaviour suggests that improving mindfulness related to food consumption before and during pregnancy may provide a strategy to address excessive gestational weight gain.

Pregnancy is a crucial phase in life during which lifestyle choices influence the health of both the pregnant mother and her baby. Pregnant women are commonly informed about the risks associated with unhealthy habits such as smoking (Lumley et al., 2009) alcohol consumption (Nilsen, Holmqvist, Hultgren, Bendtsen, & Cedergren, 2008) and the risks associated with very specific food choices such as pâté, soft cheese, or unpasteurised milk, all of which are associated with risk of listeria exposure (Janakiraman, 2008). Recent decades have also seen a rise in nutritional advice to pregnant women; however, advice has generally focused on preventing nutritional deficiencies and ensuring sufficient foetal development (Abu-Saad & Fraser, 2010). Whilst such health recommendations are important, a rise in excessive gestational weight gain (GWG) and increasing numbers of overweight or obese women entering pregnancy have also been observed (Helms, Coulson, & Galvin, 2006), both of which are associated with serious maternal and neonatal complications (Crane, White, Murphy, Burrage, & Hutchens, 2009; Herring, Rose, Skouteris, & Oken, 2012).

Excessive GWG puts the pregnant mother at increased risk of

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gestational diabetes, high blood pressure and caesarean section (Hedderson et al., 2006), each of which is associated with further complications including pre-eclampsia, pre-term birth, miscarriage and stillbirth (Cedergren, 2006). Neonatal complications include hypoglycaemia, a low 5-min Apgar score (a summary of the health of a newborn baby), seizures, and macrosomia (a newborn with excessive weight) (Stotland, Cheng, Hopkins, & Caughey, 2006). Long term, GWG is one of the strongest predictors of 1-year postpartum weight retention in the mother (Olson, Strawderman, Hinton, & Pearson, 2003) and postpartum weight retention is significantly associated with being overweight or obese 10–15 years following childbirth (Linne, Dye, Barkeling, & Rossner, 2004; Rooney & Schauberger, 2002). Health consequences associated with being overweight or obese are well understood and include serious physical (e.g., diabetes, heart disease and cancer; Ramos Salas, 2015) and mental health problems (Williams, Mesidor, Winters, Dubbert, & Wyatt, 2015). Furthermore, the intergenerational transmission of excess weight and related lifestyle factors results in significant health consequences for the child throughout their lifespan (Classen & Thompson, 2016). Due to the potential impact of excessive weight on an individual's health and wellbeing it is paramount to identify the processes that drive excessive gestational weight gain and subsequently develop strategies for prevention and intervention.

The Institute of Medicine (IOM) in America has provided guidelines regarding recommended GWG based on pre-pregnancy BMI that are suitable for use in developed countries (de Jersey, Nicholson, Callaway, & Daniels, 2012); however, studies have found pregnant women are unaware of weight gain recommendations (de Jersey et al., 2012; van der Pligt, Campbell, Willcox, Opie, & Denney-Wilson, 2011). Concern that women may restrict their diet in an unhealthy manner is an additional barrier to implementing GWG interventions. A first step toward healthier GWG may involve providing pregnant women with information regarding the recommended guidelines and health outcomes associated with excessive GWG (Ferrari & Siega-Riz, 2013). This should be paired with support to implement these recommendations including specific information regarding dietary and physical activity during pregnancy.

Health interventions for pregnant women have been successful at reducing health risk behaviours including decreasing smoking (Lumley et al., 2009) and alcohol consumption (O'Connor & Whaley, 2007). Pregnancy clearly characterises a powerful teachable moment (Lawson & Flocke, 2009), making it a valuable opportunity to target dietary choices and provide tailored interventions designed to facilitate healthy weight trajectories during pregnancy. However, the literature is inconclusive regarding the success of interventions during pregnancy. For example, Olson, Strawderman, and Reed (2004) evaluated the effect of weight monitoring, graphing and education on excessive GWG in women with normal and high pre-pregnancy BMI. Interestingly, the intervention reduced risk of GWG but only in women with a low-income. Results of other interventions have varied, with some finding no effect (Gray-Donald et al., 2000; Kinnunen et al., 2007; Skouteris et al., 2016) or larger effects in women with normal pre-pregnancy weight (McDonald, Liu, Wilcox, Lau, & Archer, 2016; Polley, Wing, & Sims, 2002). Positively, a recent Cochrane review indicated that diet or exercise interventions (or both) reduce risk of GWG by 20% (Muktabhant, Lawrie, Lumbiganon, & Laopaiboon, 2015).

Given the heterogeneity among studies addressing excessive GWG, further research is needed to determine the factors that contribute to pregnant women's dietary choices to inform future interventions. The social environment and social pressure have been shown to have both a positive and negative influence on pregnant women's dietary choices (Malek, Umberger, Zhou, & Makrides, 2015, pp. 117–140). In contrast, internal cues of satiety have been associated with eating behaviour in adults (Beshara, Hutchinson, & Wilson, 2013). It is possible that women are more in tune with internal cues during pregnancy due to awareness of their baby's movement particularly as pregnancy progresses. Dietary behaviour is likely influenced by both the external, social environment that helps define "normal" eating in pregnancy (Whale, Gillison, & Smith, 2014) and an individual's internal feedback mechanisms providing information regarding hunger and satiety. Ameliorating GWG may require addressing both drivers of consumption behaviour.

1. Eating in response to external cues: the role of perceived social norms

Social norms are unspoken rules or patterns of behaviour that are perceived as normal or socially acceptable by a group. In general, people conform to social norms in order to be accepted by others. Social norms can be further defined as perceptions of what others do (descriptive norms) and perceptions of what others think you should do (injunctive norms; Cialdini, Kallgren, & Reno, 1991). Previous research has revealed that several reference groups play an important role in an individual's dietary consumption, including perceived consumption of one's mother (Prichard, Hodder, Hutchinson, & Wilson, 2012), spouse (Pachucki, Jacques, & Christakis, 2011), other nuclear family members (Feunekes, Stafleu, de Graaf, & van Staveren, 1997), and peers (Cruwys et al., 2012; Lally, Bartle, & Wardle, 2011). Perceptions of social norms related to food consumption before, after and during pregnancy may also be a barrier to changing unhealthy dietary choices. Ryden and Sydner (2011) interviewed participants about the experience of making dietary changes as part of a dietary intervention. Challenging dietary social norms was perceived as risking social disapproval from others. The potential impact on social relationships, particularly with members of the same household, was identified as a significant barrier to sustaining dietary change, highlighting the influence of norms on dietary behaviour.

Overall, what others say and do with regard to diet influences dietary choices although how this manifests in pregnancy is unclear. In order to better understand why pregnant women, in particular, engage in certain dietary behaviours this study will assess pregnant women's perceptions of norms surrounding dietary intake held by various important reference groups. In addition to the external influence of others, internal factors also play an important role in determining diet. One intra-individual factor of interest assessing attention to internal cues is mindfulness.

2. Eating in response to internal cues: the role of mindful eating

Mindfulness involves the practice of paying attention to the activity at hand (Brown & Ryan, 2003). Individual differences in mindfulness have been increasingly recognised as influencing health and well-being including dietary behaviours (Roberts & Danoff-Burg, 2010). Because Western cultures frequently emphasise the need for food to be convenient and fast, eating is often a parallel activity, receiving little focused attention. Indeed, "mindless" eating has been linked to overconsumption, guided by unconscious cues other than physiological hunger (Wansink, 2010).

Mindful eating involves attending to taste, hunger and satiety cues (Mathieu, 2009). The main feature of mindful eating involves a non-judgmental awareness of physical and emotional sensations while eating or being in a food-related environment (Framson et al., 2009) and in practice translates to slowing down the pace of eating,