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Food Cravings and Aversions during Pregnancy: A Current Snapshot

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Abstract

Food cravings are very common during pregnancy, along with food aversions in many instances, yet their underlying causes are not well understood. Food cravings are usually met with the consumption of the craved food, which generally include unhealthy foods, that is, sweet/fat and salty/spicy foods. It is important to follow a healthy diet during pregnancy in order to promote healthy outcomes for both mother and infant, but with the consumption of unhealthy craved foods a healthy diet may be difficult to maintain. The objective of this survey was to obtain a current snapshot of food cravings during pregnancy, while also comparing differences between cravers and non-cravers. The results showed that 59% of surveyed mothers had experienced cravings. Having food cravings were associated with greater weight gain during pregnancy, but also an increased intent to breastfeed. Sweets as a category, along with fruits and vegetables, were recorded as being the most craved foods. Cravers of sweets tended to be of normal weight and were likelier to have given birth to girls. In contrast, women that craved fruits and vegetables were likelier to be overweight, and were more likely to have given birth to boys. While reported by nearly one in four of the mothers who craved fruits and vegetables, pica, or the craving of non-food items, was nearly nonexistent among the sweet cravers. These results support previous findings that food cravings remain as a normative phenomenon, but while evident for the majority of mothers, can vary tremendously in terms of foods that are preferred.

Keywords: Food Craving; Pregnancy

Introduction

Despite its being a natural experience, certain types of physiological stress may characterize pregnancy due to changes in metabolic states and hormone levels [1]. Symptoms that are associated with physiological stress during pregnancy include food cravings, aversions, nausea, and vomiting [2,3]. Specifically, a food craving is defined as “an intense desire to eat a specific food” [4]. Numerous investigators throughout the world have studied the phenomenon over the past few decades, and find that food cravings are common during gestation, with estimates of some 60 to 85% of women reporting one or more when pregnant [5–7]. As to foods craved, a study conducted in Saudi Arabia found that nearly 40 percent of pregnant women craved milk, sweets, dates, salty, or sour foods [8], while a study conducted in the United Kingdom reported that most of the participants had food cravings for sweet foods, fruit, and fruit juices [5]. More recently, in a Tanzanian study it was found that about three-quarters of the women experienced cravings, mostly for meat, mangoes, yogurt, oranges, plantains, or soft drinks [2], while researchers on Yasawa Island, Fiji, reported fruit, particularly bananas and plantains, as most often craved [9].

Even though there is no clear etiology of food cravings, scientists suggest a number of factors that may help to explain them. Environmental characteristics, such as availability of foods and geographic factors, exert a large influence on the development of cravings [10]. For example, Taggart [11] noted that two-thirds of her Scottish sample expressed a craving for “foods readily available, the most common being fruit”. In contrast, a cross-section of Ethiopian women mostly craved livestock

products, ostensibly because of their scarcity at the time of the study [12]. A more curious form of craving is *pica*, that is, the purposeful consumption of nonfood substances, observed worldwide and posited to be somewhat biologically adaptive but also culturally based [13,14].

Cultural background and traditions can also greatly control behavior with actual foods during pregnancy [15]. Cultural traditions tie into the availability of foods and preferences of food, and how daily life influences pregnancy and the chance of evolving food cravings. Physiological and psychological changes that occur during pregnancy also impact the possibility of exhibiting food cravings [16]. For example, it has been found that there is a decrease in the sense of taste during pregnancy, so some expectant mothers may choose more flavored foods during their daily diet [17]. Alternately, the spike in gestational hormones in mid-pregnancy that regulate the flow of glucose to the developing fetus has been proposed as a triggering mechanism for craving sweets [18]. Finally, food cravings can also be formed by women’s beliefs about what they should consume to ensure a healthy status for their baby. Often women eat certain foods believing that they are precautionary measures to satisfy nutritional needs of the unborn fetus [5,8].

Regarding their own health and that of the embryo, food aversions may serve the purpose of helping the pregnant female to avoid foods that can carry pathogens or chemical toxins, hence the oft-reported aversions to meat and fish [19,20], as well as to alcoholic and caffeinated beverages [21]. Yet in this vein, some puzzling aversions have also been reported. For example, the avoidance of staple foods like cereal by Ethiopian women [12], or the fear by women of south India that fruits like mangoes and pineapples might cause miscarriage because they are believed to heat the mother’s body or that kala and naval would cause black patches on the infant’s skin [22].

A healthy diet is essential during pregnancy in order to increase the chances of healthy outcomes for both the mother and baby [23]. Craving foods that are sugar- laden or processed with salt is contrary to an optimal diet during pregnancy. Therefore, the purpose of this study was to identify popular food groups craved within a U.S. sample, examine the differences between food cravers and non-cravers, and determine how cravers of varied food groups differ from each other. Give current recommendations for fruit and vegetable consumption, cravings for these foods were of particular interest. Data was therefore collected to catalog foods that were craved, daily intake of fruits, vegetables, and dairy products, and the level of nutrition education that was provided to each subject.

Materials and Methods

Respondents

The subject pool was comprised of women receiving postnatal care in a university teaching hospital in the northeastern United States. Mothers were recruited within two days after giving birth. Of the 234 mothers who were approached, 204 agreed to participate (87%). Participation in the study was voluntary, and all responses that were recorded were anonymous. The mean age of the mothers was approximately 30 years

(29.96 ± 5.84) and they self-identified as one of five different racial/ethnic groups: White (n = 50), Black (n = 36), Hispanic (n = 51), Asian (n = 48), and other (n = 19).

Instrument

The questionnaire, developed for this study, asked about participants' age, ethnicity, weight and height before pregnancy and weight gain during pregnancy. The respondents also indicated their infants' gender, birth weight and length, and described any food/nonfood cravings they had experienced during their pregnancies, including particular types of foods they had craved. Respondents also reported if they had incidents of nausea or vomiting during pregnancy. Women were asked to describe any cravings they experienced in previous pregnancies, if remembered. The survey also included questions about daily diet, particularly the presence of whole grains, the number of servings of fruit, the number of servings of vegetables, the number of servings of dairy products, and if the participants had received any nutrition education during their pregnancy.

Procedure

The study protocol was approved by the Institutional Review Board of the university teaching hospital where the study took place, with data collected in the maternity ward during the summer and fall semesters. A bilingual researcher (English and Spanish) visited women individually and invited them to participate in the study on a voluntary basis. Each mother was interviewed, face-to-face, for an average of seven minutes in her hospital room.

Results

Means and frequencies for the survey variables were computed with independent sample *t*-tests subsequently conducted using the Statistical Package for Social Sciences (SPSS, version 19.0). As shown in Table 1, as a whole the mothers could be classified as borderline overweight based on their BMI of 25.54, with the average weight gained during pregnancy at about 31 pounds. More than half of the mothers (~54%) had experienced a previous pregnancy. Sixty-four percent of the mothers experienced morning sickness during pregnancy, and only 39% of the patients received nutrition education while being pregnant. Overall, the incidence of nonfood cravings was low. Regarding mothers' daily diet, on average, they ate about three servings of fruits and vegetables and two

Variable	Mean ± Standard Deviation
Mothers' age in years	29.96 ± 5.84
Mothers' BMI before pregnancy	25.54 ± 6.08
Mothers' weight gained during pregnancy (pounds)	30.85 ± 16.70
Male newborns	51.47%
Newborns' weight (ounces)	114.16 ± 22.11
Newborns' length (inches)	19.77 ± 1.21
First childbirth	45.59%
Food cravings	58.82%
Food aversion	41.67%
Nonfood craving	13.73%
Morning sickness	63.64%
Daily servings of fruit and vegetables	3.08 ± 1.47
Daily servings of dairy products	2.29 ± 1.41
Daily consumption of whole grains	81.88%
Nutrition education in pregnancy	39.22%
Intend to breastfeed	87.75%
Food cravings in previous pregnancies, if remembered	21.61%

Table 1: Characteristics of respondents (n=204)

servings of dairy products. Newborns weighed on average 7-pounds, 8-ounces, and their length was approximately 19¾ inches.

Approximately 59% of the mothers (120/204) experienced cravings during pregnancy. Cravers and non-cravers were first compared in their answers to the questionnaire. As shown in Table 2, women who reported cravings gained more weight (~33 lbs.) than non-cravers (~28 lbs.) and were more likely to have food aversions (53.3% vs. 25.0%). They also consumed more dairy products on a daily basis (2.44 vs. 2.08). The results also show that just over 76% mothers who experienced cravings during their previous pregnancies were likely to have repeated cravings during their current pregnancy, as compared to about 30% of non-cravers. Likewise, 95% of cravers planned to breastfeed their infants compared to about 79% percent of non-cravers.

A listing of all foods that were craved and for which they had aversions was next created. While mothers were free to name as many craved foods (as well as aversions) that they wished, only the *first* food they mentioned was considered for the present analysis (The listing of all foods that were craved is available from the authors). These food items were clustered into groups as appropriate, with separate categories for certain foods that were mentioned frequently (e.g., watermelon, dill pickles). As shown in Table 3, the most popular items craved were ice cream and other sweets, watermelon, tropical fruits, and fruits/juices.

Based on their conceptual similarities, and to produce nearly even sub-samples, two food categories were created: a Sweets category (sweets, ice cream, and chocolate) and a Fruits and Vegetables (F&V) category (fruits/juices, watermelon, tropical fruits, and vegetables). Responses for the 34 mothers who craved F&V were then compared to the 36 mothers who craved Sweets.

As shown in Table 4, mothers who craved F&V averaged a BMI of 26.56, which placed them in the overweight category, and nearly 61% had given birth to boys. At 23.5%, they were also much more likely to have exhibited pica behavior, which was reported by only one of the Sweets craving respondents. Mothers who craved Sweets averaged a BMI of 23.61, or normal weight status, with about 58% having delivered girls. For well over half of the Sweet cravers (58%) this was their first child, in contrast to only about a third of the F&V cravers (32%) for whom this baby was their first.

Variable	Non-Cravers (n=84)	Cravers (n=120)	t-value
	Mean ± SD ^a	Mean ± SD	
Mothers' age	30.60 ± 6.02	29.52 ± 5.70	1.28
Mothers' BMI	25.76 ± 6.11	25.39 ± 6.08	.47
Mothers' weight gain during pregnancy (pounds)	28.34 ± 12.81	32.61 ± 18.82	-1.90*
Male newborns	53.75%	53.91%	-.06
Newborns' weight (ounces)	112.57 ± 24.94	115.28 ± 19.94	-.82
Newborns' length (inches)	19.68 ± 1.30	19.83 ± 1.15	-.83
First childbirth	45.23%	45.83%	-.45
Food aversion	25.00%	53.33%	-4.36**
Nonfood craving	13.10%	14.17%	-.22
Morning sickness	60.71	65.00	-.62
Daily servings of fruit and vegetables	2.98 ± 1.53	3.15 ± 1.44	-.81
Daily servings of dairy products	2.08 ± 1.35	2.44 ± 1.44	-1.84*
Daily consumption of whole grains	80.95	82.50	-.13
Intend to breastfeed	78.57	94.96	-3.37**
Nutrition education in pregnancy	35.71%	42.02%	-.91
Food cravings in previous pregnancies, if remembered	29.79%	76.19%	-4.78**

Table 2: Differences between Non-Cravers and Cravers. (SD: Standard deviation; * *p* < .05; ***p* < .001)

#	Foods	Frequency
1	Sweets	21
2	Ice Cream	14
3	Fruits/ fruit juice	12
4	Watermelon	11
5	Tropical Fruits	7
6	Cultural Foods	6
7	Breakfast foods	5
8	Starches	5
9	Fast/Fatty/Processed foods	5
10	Vegetables	4
11	Dill pickles	4
12	Soup	3
13	Spicy foods	3
14	Dairy	3
15	Pizza	3
16	Soda/ pop	3
17	Fish/ Seafood	2
18	Chicken	2
19	Meat	2
20	Snack	1
21	Salty foods	1
22	Coffee/tea/soymilk	1
23	Eggs	1
24	Chocolate	1

Table 3: Frequency of craved foods named first.

Variable	F&V (n=34)	Sweets (n=36)	t-value
	Mean + SD ^a	Mean ± SD	
Mothers' age	29.15 ± 6.46	29.92 ± 5.73	-.82
Mothers' BMI	26.56 ± 6.57	23.61 ± 4.97	2.01*
Mother's weight gain during pregnancy (pounds)	30.88 ± 16.73	32.69 ± 9.92	-.33
Male newborns	60.61%	41.67%	2.36**
Newborns' weight (ounce)	113.45 ± 16.49	114.67 ± 18.10	-.96
Newborns' length (inches)	19.51 ± 1.17	19.84 ± .92	-.53
First childbirth	32.35%	58.33%	-2.07*
Food aversion	41.17%	55.56%	-1.64
Nonfood craving	23.53%	0.03%	2.16**
Morning sickness	61.76%	69.55%	-1.76
Daily servings of fruit and vegetables	3.31 ± 1.74	3.19 ± 1.41	.12
Daily servings of dairy products	2.65 ± 2.10	2.25 ± 1.01	1.03
Daily consumption of whole grains	85.29%	75.00%	.86
Intend to breastfeed	100.00%	94.29%	.79
Nutrition education in pregnancy	35.29%	48.57%	-.67
Food cravings in previous pregnancies, if remembered	77.27%	85.71%	-1.41

Table 4: Differences between F&V cravers and Sweets cravers. (SD: Standard deviation; * $p < .05$; ** $p < .01$)

Discussion

Food cravings are a common phenomenon during pregnancy. As the present results showed, 59% of the mothers we surveyed reported cravings. This is fairly consistent with other reports that show percentages that exceed 60% [6,7,24]. It has often been posited that specific food cravings may be a response to a nutritional deficiency. However, a number of investigations do not support a relation between dietary intake and cravings, and thus do not conclude that nutritional

deficiencies result in cravings [16,17]. In fact, sensory monotony of diet was shown to predict food cravings better than nutritional deprivation [25].

It is generally acknowledged that the most commonly craved foods during pregnancy are chocolate, chips, citrus fruits, pickles, and ice cream [23]. The present results are relatively consonant with that list, as the most demanded foods were sweets, especially ice cream, and F&V, though watermelon and tropical fruits were named more frequently than were citrus fruits. Bayley and colleagues [5] noted fruit, fruit juices, and sweets as most craved, while Orloff and Hormes [3] cited sweets (e.g., chocolate), carbohydrates (e.g., pizza), and animal protein (e.g., steak) at the top of their list. While only one mother in this study mentioned chocolate first, seven others did include chocolate when recounting all of their cravings. Coincidentally, the proportion of woman who craved F&V almost equaled those who craved Sweets. Previous studies show that cravings for high-energy/low-nutrient dense foods like sweets may be explained by the lower cost of these foods, their wide availability, and marketing campaigns [26]. Hence, the craving of F&V by nearly as many women, despite more expense and less promotion, is a positive finding.

A higher proportion of boys were born to F&V cravers, while more girls were born to cravers of Sweets. To the best of our knowledge, the relationship of food cravings during pregnancy to newborns' gender has not been investigated. Similarly, it is not obvious as to why cravers of Sweets had a lower incidence of nonfood cravings. One hypothesis may be that sweets are higher in calories, so that cravers might achieve a satiety level more quickly, while the F&V group of cravers did not feel full as rapidly after eating F&V. Thus, F&V cravers may have looked for additional sources of oral gratification, and in this sample, by primarily chewing on ice. Again, this correlation has not been investigated by other researchers. Another observation was that in general the mothers who had experienced cravings, not exclusively cravers of F&V, were more likely to have food aversions, which is supported by other studies [5,9,10,17]. Food aversions were tabulated and it was found that high protein foods like chicken and fish as well as fatty processed foods were most prominent for this sample. In contrast, some have reported that meats or other high protein foods were most often craved [12,27]. It is noteworthy that no respondent named a sweet food or any fruit for that matter, as a food for which she had an aversion.

Mothers who craved F&V had a higher mean BMI in pre-pregnancy than the mothers who craved Sweets. Since cravers of Sweets were leaner before pregnancy, albeit at healthy weight, it is possible that their desire for such higher energy foods was due to the need to increase total daily calories [10]. It is recommended that every pregnant woman add about 300 calories per day during the second and third trimester of pregnancy [23]. Both subgroups of cravers gained about 32 pounds during pregnancy, a greater amount than the 28 pounds reported by non-cravers.

Even though weight gained during pregnancy by this sample of mothers appeared to be optimal, their mean pre-pregnancy BMI of just over 25 would place half of the mothers into the overweight category. Some reports suggest that approximately 50% of American women are overweight prior to pregnancy, and that more than 50% gain an excessive amount of weight during pregnancy [3]. Excess gestational weight gain is a strong predictor of fetal macrosomia [28] and overweight in children [29]. Another drawback of excessive gestational weight gain is that overweight mothers usually have greater difficulty initiating breastfeeding, and in turn may shorten the duration of breastfeeding due to feelings of discouragement [23,30]. As nearly 95% of the mothers with cravings intended to breastfeed, being excessively overweight would have serious consequences. Of particular relevance here, recent research has identified food cravings as possibly having a role in excess gestational weight gain [31].

The risk for overweight points to the need for women to receive nutrition education during their pregnancy if not before conception. Fewer than two in five of the surveyed mothers reported that they had any nutrition education with most who had saying they educated themselves by browsing the internet and reading books. Nutrition education should be of higher quality and taught by health professionals as it is important that pregnant women learn information based on facts rather than popular media. The main key points of every nutrition education program should be focused on maintaining a healthy lifestyle before and during pregnancy, learning recommended weight gain, and learning foods to be avoided and consumed. Women should be educated on how to replenish nutrient stores after delivery, reduce chances of developing chronic diseases, and how to prevent problems in later pregnancies [23]. Most importantly, nutrition education should target obesity prevention to increase the number of women who are of normal weight in the pre-pregnancy period.

Another reason for educating pregnant women about nutrition is that mothers may not be eating enough of healthy foods. As shown in our results, mothers on average consumed merely three servings of combined F&V per day while pregnant whereas the *2015-2020 Dietary Guidelines for Americans* [32] recommend four servings of fruits and five servings of vegetables. Even the women who craved F&V reported less than four servings a day. Moreover, low F&V intake is likely to decrease further after delivery. Specifically for low-income women, the pattern consists of F&V intake decreasing after birth, with intake of fat and added sugar increasing after birth. Thus, postpartum women may be at risk for even lower overall nutrient status [26]. Nutrition education targeted at maternal diet and supplement intakes during pregnancy has been shown to improve a variety of maternal and neonatal health indicators [33].

The present results are limited, to be sure, by our reliance on a convenience sample. Nevertheless, the inclusion of Black, Hispanic and Asian mothers in addition to White respondents speaks to its representativeness. To that end, our findings add to the literature that food cravings are common among pregnant women with the most craved foods including sweets and F&V. Acknowledging that food cravings are real is important both for mothers and health professionals. While craving and consuming F&V is beneficial for mother's health, sweets are to be consumed with caution, especially when mothers have chronic diseases. Doctors, dietitians, and mothers themselves can use the results to make healthier dietary choices during pregnancy and especially in efforts to slow the epidemic of obesity. This study showed that many women go into pregnancy being overweight, which might put both the mother and infant in danger. Thus, there is a need for women who are pregnant or are of childbearing age to look for professional nutrition education during the pregnancy period to learn how to adopt healthy dietary habits.

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