

Gender differences in taste and foods habits

Taste and
foods habits

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Abstract

Purpose – The purpose of this paper is to examine gender differences in food habits and food choices, including decisions in healthy eating, to personalize diet therapies to be as effective possible for long-term weight loss.

Design/methodology/approach – In this cross-sectional study, eating behaviours were assessed using a questionnaire composed of 12 questions concerning food habits, 17 concerning food taste, and four about healthy eating. There were 2,021 (1,276 women) Caucasian adults enrolled in the study.

Findings – Statistically significant differences in women compared to men occurred for the following questionnaire entries reading eating habits: whole grain food (10.0 per cent higher in women; $p < 0.001$); cereals such as barley (8.3 per cent higher in women, $p < 0.001$); cooked vegetables (6.6 per cent higher in women, $p < 0.001$); eggs (5.0 per cent lower in women, $p = 0.03$); meat (9.3 per cent lower in women, $p < 0.001$); and processed meat (7.1 per cent lower in women, $p < 0.001$). Women consume more water, sugar-sweetened beverages and alcoholic drinks than males, and liked salty foods more than sweet foods. Men ate faster, ate more during the night and slept worse than women. Men ate meals out more often and tended to be hungrier later in the day. Women missed more meals and ate more times during the day and were also more likely to eat uncontrollably.

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Research limitations/implications – The authors observed strong evidence of profound gender-specific differences between men and women in terms of dietary habits, the taste of food and in the relationship with meals.

Practical implications – The findings suggest a need for the creation of gender-specific programs for promoting a healthy lifestyle.

Social implications – A need for the creation of gender-related programs for promoting healthy lifestyle has been demonstrated.

Originality/value – Reasons for the different eating behaviours among men and women have been found. Western society's perception of the ideal body weight is much lower for women than for men. In general, social perceptions influence nutritional behaviour to a great extent. Women's greater nutritional knowledge and sex-specific taste preferences also account for the differences in eating behaviour.

Keywords Diet, Weight loss, Mediterranean diet, Eating habits, Gender differences, Healthy eating behaviour

Paper type Research paper

Introduction

The most suitable diet for human beings and the well-being of the planet has been well characterized since the 1950s. A diet focused on vegetables, whole grains, fruit, legumes, oilseeds, small blue fish and yoghurt can potentially prevent and cure most chronic degenerative diseases of the modern era (Franquesa *et al.*, 2019). The same nutritional model is probably the best choice to help save the Earth (Springmann *et al.*, 2018). However, the effectiveness of long-term nutritional therapies is very low (Yumuk *et al.*, 2015). A multidisciplinary approach, a personalized lifestyle change (MacLean *et al.*, 2014) and diets that do not involve high amounts of caloric restriction (Lombardo *et al.*, 2017) are the therapies that have proven to be the most effective in the long term.

New diagnostic tools are needed to gain an in-depth understanding of subjects' lifestyle habits and to prepare the most effective nutritional therapies. One of the most interesting aspects of this is the understanding of gender differences in relationships with food. Diets with the same amount of calorie restriction are often less effective for women than for men (Williams *et al.*, 2014).

Several studies have demonstrated important gender differences in relationships with food. Beardsworth *et al.* showed that women have more "virtuous" food choice patterns in terms of improving health but more food-related guilt and "disordered" eating than men (Beardsworth *et al.*, 2002). Gender differences were also observed for specific food categories (Padulo *et al.*, 2017), probably due to differing mechanisms in the superior temporal sulcus (STS) that account for food preference (Manippa *et al.*, 2017). Gender-specific differences in nutritional knowledge become obvious during adolescence and persist into adulthood (Davy *et al.*, 2006). For instance, women tend to characterize meat and meat-eating experiences negatively (Kubberød *et al.*, 2002). Men often have less nutritional knowledge, and their approach to food is more frequently uncomplicated and more pleasure oriented than women. Females instead preferred comfort foods that were more snack related (such as chocolate and ice cream) (Wansink *et al.*, 2003) and more frequently present with very serious health complications as a result of eating disorders (Di Cola *et al.*, 2014). For men, sports and exercise are more important than nutrition to their health and beauty (Kiefer *et al.*, 2005).

To our knowledge, few studies have evaluated food gender preferences and healthy eating in adults in a large sample of subjects who want to improve their lifestyle.

Methods

Subjects

The final sample was comprised of 2,021 subjects (1,276 females and 745 males). They were enrolled in a weight-loss intervention at an obesity centre in Rome, Italy. Exclusion criteria were as follows: age <12 years or >75 years; pregnancy or nursing; body mass index (BMI) < 18.5 kg·m⁻² or >40 kg·m⁻² and any lifestyle treatment in the year before the study. All subjects underwent an online test survey before the visit and gave their own written informed consent to participate. Data collection was performed between June 2015 and January 2019. Online support was provided. Study protocols including consent form has been approved by IRCCS San Raffaele ethical body. All procedures performed were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments.

Study procedures and diagnostic criteria

The online questionnaire was structured and self-administered. It consisted of three parts. In agreement with others, the instrument incorporated food habits, taste and possible eating disorder questions that were important for dietary gender differences. We did not conduct a formal test of validity, but the questionnaire was similar to other validated food taste questionnaires (Carbonneau *et al.*, 2017).

The first part queried how many times subjects ate per day and when they were hungry. They were also questioned whether they usually miss meals, ever eat distracted or not at the table or eat fast. The differences between normal days and weekends were evaluated by questions about eating out for meals and if they ate differently on the weekends. Eating disorders were also investigated by questions about uncontrollable eating (even if not hungry) or waking up at night to eat. To explore the relationship between hunger and sleep deprivation, how the subject slept at night and if they slept bad because of struggling to fall asleep, woke up a lot sooner than they would have liked or woke up several times during the night was queried.

In the second part, the question “Do you like the following foods?” queried subjects about tastes of each food group individually (“like”, “don’t like” and “don’t know”). Subjects self-reported their nutritional tastes in a food frequency questionnaire comprising cow’s milk, vegetable drinks (e.g. soy milk), low-fat and low-sugar yogurt, fresh cheeses, meat, processed meat (e.g. prosciutto), fish, eggs, legumes, cooked vegetables, raw vegetables, fruits, cereals (e.g. spelt and barley), whole grains, nuts, tofu and dark chocolate (cocoa > 75 per cent).

The third part of the questionnaire asked about how many litres of water were drank per day, how many times alcoholic beverages were consumed in a week and how many sugar-sweetened beverages were consumed per day.

Statistical analysis

Statistical analysis was performed using the SOFA STATISTICS (software version 1.4.6, Paton-Simpson and Associates, Auckland, New Zealand). Descriptive statistics (frequencies) described the taste and food consumption patterns of the subjects (for the whole sample and also separately for men and women). Chi-squared statistics were used to test the overall differences between male and female individuals (statistical significance set at $p \leq 0.05$).

Results

Food taste preferences

As [Table I](#) shows women preferred more whole grain foods (83.5 vs 73.6 per cent; $p < 0.001$), cereals (e.g. spelt and barley) (80.5 vs 72.2 per cent; $p < 0.001$) and cooked vegetables (93.0 vs 86.4 per cent; $p < 0.001$) than men. Men seemed to like more eggs (82.9 vs 87.9 per cent;

$p = 0.03$), meat (82.1 vs 91.4 per cent; $p < 0.001$) and processed meat (e.g. prosciutto) (83.4 vs 90.5 per cent; $p < 0.001$) than women. Answers of “rarely” to food tastes were not considered.

Other differences between men and women regarding tastes were not significant (ns), including cow’s milk (59.4 vs 60.8 per cent; $p = ns$), low-fat and low-sugar yogurt (54.8 vs 58.3 per cent; $p = ns$), vegetable drinks (e.g. soy milk) (38.2 vs 33.4 per cent; $p = ns$), raw vegetables (51.8 vs 45.9 per cent; $p = ns$), fruits (90.7 vs 89.9 per cent; $p = ns$), legumes (85.3 vs 87 per cent; $p = ns$), fish (81.8 vs 86.0 per cent; $p = ns$), fresh cheeses (82.8 vs 80.7 per cent; $p = ns$), nuts (85.6 vs 81.5 per cent; $p = ns$), tofu (23.4 vs 20.4 per cent; $p = ns$) and dark chocolate (cocoa > 75.0 per cent) (74.7 vs 74.8 per cent; $p = ns$) (Table II).

Water, sugar-sweetened beverages and alcohol preferences

On average, women drank less water (≤ 1 l per day 55.1 per cent vs 40.3 per cent; $p < 0.001$), fewer sugar-sweetened beverages (0 drinks per day: 35.4 per cent vs 26.6 per cent; $p < 0.001$) and fewer alcoholic drinks (0 drinks per day 41.8 vs 30.1 per cent; $p < 0.001$) than men in a day. Women also preferred salty foods more than sweet foods compared to men ($p < 0.001$) (Table III).

Meal behaviour

Men ate faster 67.5 vs 79.3 per cent; $p < 0.001$), while women missed more meals (26.9 vs 21.3 per cent; $p < 0.001$). Men skipped breakfast more often (10 vs 17 per cent; $p < 0.001$). Women ate uncontrollably, even if not hungry, more frequently (80.6 vs 69 per cent; $p < 0.001$), while more men woke up at night to eat (19.8 vs 28.2 per cent; $p < 0.001$). Women seemed to be more hungry in the first part of the day than the second ($p = 0.024$), while men seemed to eat less times per day ($p < 0.001$). Men usually ate out from home more often (67.8 vs 75.5 per cent; $p < 0.001$), ate more often in a refectory setting at lunch and more often ate foods from home at work than women; women usually ate together in restaurants more often while on lunch breaks from work (Table IV).

No significant gender differences were seen when asked about eating differently on the weekends compared to working days (79.1 vs 76.9 per cent; $p = ns$), eating alone (49.2 vs 42 per cent; $p = ns$) and eating while distracted by smartphones or televisions or not at the table (66.1 vs 62.5 per cent; $p = ns$).

Sleep habits

Women more frequently slept better than men (50.9 vs 45.4 per cent; $p < 0.001$), but women reported waking up several times during the night (9.38 per cent more than men; $p < 0.001$) (Table III).

All data not shown have been included in the additional material. Data set is available at Mendeley Data, v1 <http://dx.doi.org/10.17632/cy8zywfh3.1>

Table I.
Differences between women and men in food preferences

Type of food	Difference % woman vs men	p
Whole grains food	10	<0.001
Cereals	8	<0.001
Cooked vegetables	6,6	<0.001
Eggs	-5	0.03
Meat	-9,3	<0.001
Processed meat	-7,1	<0.001

Question	Answer	Total (2021 subjects)		Women (1276 subjects)		Men (745 subjects)		Difference [%]	<i>p</i>
		No.	[%]	No.	[%]	No.	[%]		
Do you eat whole grains food?	<i>Don't know</i>	16	0.8	5	0.4	11	1.5	-1.1	<0.001
	<i>NO</i>	114	5.6	63	4.9	51	6.85	-1.9	
	<i>Rarely</i>	277	13.7	142	11.1	135	18.1	-7.0	
	<i>Yes</i>	1614	79.9	1066	83.5	548	73.56	10	
Do you eat cereals (e.g. spelled, barley)?	<i>Don't know</i>	20	1.0	8	0.6	12	1.6	-1.0	<0.001
	<i>NO</i>	173	8.6	111	8.7	62	8.3	0.4	
	<i>Rarely</i>	263	13.0	130	10.2	133	17.8	-7.7	
	<i>Yes</i>	1565	77.4	1027	80.5	538	72.2	8.3	
Do you eat cooked vegetables?	<i>Don't know</i>	6	0.3	3	0.2	3	0.4	-0.2	<0.001
	<i>NO</i>	50	2.5	25	2.0	25	3.4	-1.4	
	<i>Rarely</i>	134	6.6	61	4.8	73	9.8	-5.0	
	<i>Yes</i>	1831	90.6	1187	93.0	644	86.4	6.6	
Do you eat eggs?	<i>Don't know</i>	3	0.2	2	0.2	1	0.1	0	<i>p</i> = 0.03
	<i>NO</i>	89	4.4	63	4.9	26	3.5	1.4	
	<i>Rarely</i>	216	10.7	153	12	63	8.5	3.5	
	<i>Yes</i>	1713	84.8	1058	82.9	655	87.9	-5	
Do you eat meat?	<i>Don't know</i>	9	0.4	6	0.5	3	0.4	0.1	<0.001
	<i>NO</i>	113	5.6	90	7	23	3.1	4	
	<i>Rarely</i>	170	8.4	132	10.3	38	5.1	5.2	
	<i>Yes</i>	1729	85.6	1048	82.1	681	91.4	-9.3	
Do you eat processed meat (es prosciutto)?	<i>Don't know</i>	7	0.3	3	0.2	4	0.5	-0.3	<0.001
	<i>NO</i>	161	8	126	9.9	35	4.7	5.2	
	<i>Rarely</i>	115	5.7	83	6.5	32	4.3	2.2	
	<i>Yes</i>	1738	86	1064	83.4	674	90.5	-7.1	

Table II.
Food taste
differences between
women and men

Discussion

Explanations for the different eating behaviours among men and women can be found in psychological and sociocultural factors.

In the Western society, the ideal body weight is perceived to be much lower for women than for men. In general, social perceptions influence nutritional behaviour to a great extent. Our data showed that women more often than men have an ambivalent relationship with food. In fact, women usually give greater importance to healthy eating while orienting themselves more strongly with social norms. Starting from adolescence, women are reported to have a higher intake of fruits and vegetables, a higher intake of dietary fibre and a lower intake of fat (Djordjevic-Nikic and Dopsaj, 2013). Another factor that might contribute to gender differences in diet is the greater concern of women about weight control, and their higher frequency of dieting (Wardle *et al.*, 2004). The greater nutritional knowledge of women and sex-specific taste preferences also account for the differences in eating behaviour (Baker and Wardle, 2003).

We discovered that women eat uncontrollably (even if not hungry) and miss meals more frequently than men. Young females usually pay more attention to diet and snack less than young males. As they grow older, food repertoire widens due to social and cognitive influences (Nu *et al.*, 1996). These gender differences may be due to the hormonal regulation

Questions	Answers	Total (2021 subjects)		Women (1276 subjects)		Men (745 subjects)		Difference [%]	<i>p</i>
		No.	[%]	No.	[%]	No.	[%]		
How many litres of water do you drink per day on average?	0.0	29	1.4	23	1.8	6	0.8	1.0	<0.001
	1.0	1003	49.6	703	55.1	300	40.3	14.8	
	2.0	803	39.7	469	36.8	334	44.8	-8.1	
	3.0	161	8.0	73	5.7	88	11.8	-6.1	
	4.0	20	1.0	8	0.6	12	1.6	-1.0	
	5.0	5	0.2	0	0.1	5	0.7	-0.7	
How many sugary drinks or added sugar do you consume per day on average?	0.0	650	32.2	452	35.4	198	26.6	8.8	<0.001
	1.0	433	21.4	267	20.9	166	22.3	-1.4	
	2.0	339	16.8	225	17.6	114	15.3	2.3	
	3.0	295	14.6	157	12.3	138	18.5	-6.2	
	4.0	170	8.4	96	7.5	74	9.9	-2.4	
	5.0	58	2.9	34	2.7	24	3.2	-0.6	
	7.0	23	1.1	12	0.9	11	1.5	-0.5	
How many times do you consume alcoholic beverages in a week?	0.0	757	37.5	533	41.8	224	30.1	11.7	<0.001
	1.0	586	29	376	29.5	210	28.2	1.3	
	2.0	287	14.2	162	12.7	125	16.8	-4.1	
	3.0	170	8.4	94	7.4	76	10.2	-2.8	
	4.0	64	3.2	25	2	39	5.2	-3.3	
	5.0	59	2.9	33	2.6	26	3.5	-0.1	
	7.0	14	0.7	9	0.7	5	0.7	0.1	
Do you like salty (1) or sweet (10)?	1.0	121	6.0	95	7.4	26	3.5	34	<0.001
	2.0	63	3.1	44	3.4	19	2.5	1	
	3.0	108	5.3	71	5.6	37	5.0	0.6	
	4.0	134	6.6	84	6.6	50	6.7	-0.1	
	5.0	487	24.1	333	26.1	154	20.7	5.4	
	6.0	121	6.0	70	5.5	51	6.8	-1.3	
	7.0	172	8.5	95	7.4	77	10.3	-2.9	
	8.0	329	16.3	180	14.1	149	20	-5.9	
	9.0	156	7.7	80	6.3	76	10.2	-3.9	
	10.0	330	16.3	224	17.5	106	14.2	3.3	

Table III.
Differences in food habits between women and men

of appetite, which influences central and peripheral signals implicated in the feedback controls of eating (Asarian and Geary, 2006).

In accordance with previous studies (Mattioli *et al.*, 2013), women preferred more high-fibre foods, such as whole grain cereals (e.g. spelt and barley) and cooked vegetables, than men (Donkin *et al.*, 1998). Consumption healthy foods, such as high-fibre foods, are more commonly attributed to the females. We discovered that men more often than women prefer eggs, meat and processed meat. This is probably because protein-rich foods, such as meat, represent strength and virility and are associated with men. In accordance previous studies, a higher proportion of men reported eating more meat, choosing fewer high-fibre foods, eating fewer low-fat foods and consuming more soft drinks than women (Shiferaw *et al.*, 2012). As previously hypothesized, men probably make stronger associations between meat and healthiness than women do, and a “meat-strength/power association may mediate the meat-masculinity link readily observed across western cultures” (Love and Sulikowski, 2018).

Taste and
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Question	Answers	Total (2021 subjects)		Women (1276 subjects)		Men (745 subjects)		Difference [%]	<i>p</i>
		No.	[%]	No.	[%]	No.	[%]		
How many times do you eat a day?	1.0	8	0.4	4	0.3	4	0.5	-0.2	<0.001
	2.0	112	5.5	54	4.2	58	7.8	-3.5	
	3.0	549	27.2	330	25.9	219	29.4	-3.5	
	4.0	603	29.8	386	30.2	217	29.1	1.1	
	5.0	651	32.2	436	34.2	215	28.9	5.3	
	6.0	80	4.0	55	4.3	25	3.4	0.9	
	7.0	18	0.9	11	0.9	7	0.9	-0.1	
When are you hungry during the day?	When I wake Up	145	7.2	104	8.1	41	5.5	2.6	0.024
	During the morning	576	28.5	373	29.2	203	27.2	2	
	In The Afternoon	418	20.7	276	21.6	142	19.1	2.6	
	Before Dinner	619	30.6	371	29.1	248	33.3	-4.2	
	After Dinner	188	9.3	107	8.4	81	10.9	-2.5	
	I'm always hungry	75	3.7	45	3.5	30	4	-0.5	
Do you eat fast?	NO	569	28.1	415	32.5	154	20.7	11.8	<0.001
	YES	1452	71.8	861	67.5	591	79.3	-11.8	
Do you ever miss meals?	NO	1263	62.5	804	63	459	61.6	1.4	<0.001
	YES (Total)	503	24.9	344	27	159	21.3	5.6	
	<i>Yes. I have no time</i>	41	2	28	2.2	13	1.7	0.4	
	<i>Yes. for no reason</i>	427	21.1	288	22.6	139	18.7	3.9	
	<i>Yes. for craving before meals</i>	35	1.7	28	2.2	7	0.9	1.2	
	<i>Yes. I always skip breakfast</i>	255	12.6	128	10	127	17	-7	
Do you happen to eat uncontrollably even if you're not hungry?	NO	478	23.6	247	19.4	231	31	-11.6	<0.001
	YES (Total)	1543	76.3	1029	80.6	514	69	11.6	
	<i>Yes. Every Day</i>	150	7.4	101	7.9	49	6.6	1.3	
	<i>Yes. Infrequent (1/month)</i>	683	33.8	440	34.5	243	32.6	1.9	
	<i>Yes. Often (>1/week)</i>	710	35.1	488	38.2	222	29.8	8.4	
Do you eat out with meals?"	NO	594	29.4	412	32.2	183	24.5	7.7	<0.001
	YES (Total)	1427	70.6	864	67.7	562	75.5	-7.7	
	<i>Often I eat at restaurant in the evening</i>	149	7.4	89	7	60	8.1	-1.1	
	<i>Refectory at lunch</i>	265	13.1	130	10.2	135	18.1	-7.9	
	<i>At lunch I took foods from home at work</i>	257	12.7	132	10.4	125	16.7	-6.3	
	<i>Together at work in restaurants</i>	756	37.4	513	40.2	243	32.6	7.6	
Do you wake up to eat at night?	NO	1558	77.1	1023	80.2	535	71.8	8.4	<0.001
	YES (Total)	463	22.9	253	19.8	210	28.2	-8.4	
	<i>Every Day</i>	45	2.2	28	2.2	17	2.3	3	
	<i>Infrequent (1/month)</i>	271	13.4	146	11.4	125	16.8	-1.8	
	<i>Often (>1/week)</i>	147	7.3	79	6.2	68	9.1	-2.9	

(continued)

Table IV.
Relationship with meals and sleep habits between women and men

Question	Answers	Total (2021 subjects)		Women (1276 subjects)		Men (745 subjects)		Difference [%]	<i>p</i>
		No.	[%]	No.	[%]	No.	[%]		
Do you sleep well at night?	NO	1033	51.1	626	49.1	407	54.6	-5.6	<0.001
	<i>I struggle to fall asleep</i>	238	11.8	138	10.8	100	13.4	-2.6	
	<i>I wake up a lot sooner than I would like</i>	180	8.9	108	8.5	72	9.7	-1.2	
	<i>I wake up several times during the night</i>	570	28.2	404	31.7	166	22.3	9.4	
	YES (Total)	988	48.9	650	50.9	338	45.4	5.6	

Table IV.

Men slept less, woke up more to eat at night and consequently skipped breakfast more often than women. Night eating syndrome has been positively associated with increased BMI, and the male gender and elevated psychological distress were associated with those who consumed nocturnal snacks (Colles *et al.*, 2007). Men also ate out from home more often than women. In a large population-based cohort study, eating home cooked meals more frequently was associated with better dietary quality and lower adiposity (Mills *et al.*, 2017). It was found that daily consumption of ready-made meals was associated with higher calorie intake and poor compliance with nutritional recommendations, and therefore could plausibly increase the risk of central obesity and fat deposition (Alkerwi *et al.*, 2014).

Limitations

Our study has several limitations. Since it is a cross-sectional study, it cannot be used to analyse behaviour over a period, and it cannot distinguish cause and effect. Moreover, the proposed questionnaire has not been scientifically validated. Several likely relevant questions were not included, such as the participant's weight and profession, and for women the menstrual period, which as is known to have a large influence on the taste preferences of women.

Conclusions

The worldwide prevalence of obesity nearly tripled between 1975 and 2016 (Ulijaszek, 2003). The prevalence of obesity among men and women varies broadly, but in general more women are obese than men (Kanter and Caballero, 2012). Our findings revealed deep gender differences between men and women in terms of eating habits, the taste of food and the relationship with meals. This data suggests the need to create gender-specific programs to promote a healthy lifestyle, as previously demonstrated for individualized physical activity (Bellia *et al.*, 2017). More research is needed to improve the understanding of these gender discrepancies and ultimately to improve lifestyle therapies.

Table shows differences between women and men in food preferences for whole grains foods, cereals, cooked vegetables, eggs, meat and processed meat. Chi-squared statistics were used to test the overall differences between male and female individuals (Statistical significance $p < 0.001$, for eggs $p = 0.03$).

The table shows the answers given by patients to questions about taste preferences. Only answers with statistically significant gender differences are reported (the others are present in the supplementary material). Chi-squared statistics were used to test the overall

differences between male and female individuals (statistical significance set at $p \leq 0.05$). (Data as mean \pm SD).

The table shows the answers given by patients to questions about food habits preferences. Only answers with statistically significant gender differences are reported (the others are present in the supplementary material). Chi-squared statistics were used to test the overall differences between male and female individuals (statistical significance set at $p \leq 0.05$). (Data as mean \pm SD).

The table shows the answers given by patients to questions about relationship with meals and sleep habits. Only answers with statistically significant gender differences are reported (the others are present in the supplementary material). Chi-squared statistics were used to test the overall differences between male and female individuals (statistical significance set at $p \leq 0.05$). (Data as mean \pm SD).

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