Correlates of maternal diet during pregnancy

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Introduction

Conceptual and methodological limitations of a single or a few nutrients or foods:

1. The `single nutrient' approach may be inadequate for taking into account complicated interactions among nutrients
2. The high level of intercorrelation among some nutrients makes it difficult to examine their separate effect
3. The effect of a single nutrient may be too small to detect, but the cumulative effects of multiple nutrients included in a dietary pattern may be sufficiently large to be detectable
4. The analyses based on a large number of nutrients or food items may produce statistically significant associations simply by chance
5. Because nutrient intakes are commonly associated with certain dietary patterns, `single nutrient' analysis may potentially be confounded by the effect of dietary patterns

Looking at overall diet quality, through dietary patterns, is believed to represent a valid and meaningful measure of overall nutrient intake and is a promising approach when aiming to study diet related associations.

The aim of the study is to evaluate the correlates of maternal diet during pregnancy.

Materials and methods

Study design - Polish Mother and Child Cohort Study (REPRO_PL)

Study population – 1306 pregnant women (up to 12 weeks of single pregnancy,

no assisted conception, no pregnancy complications and no chronic diseases

Maternal diet during pregnancy - Food Frequency Questionnaire (FFQ) in 20-24 weeks of pregnancy

In FFQ the women were asked to report how often, on average, they consumed specified amounts of each food. The selected frequency category for each food item was converted to daily intake. Based on factor analysis two dietary patterns were identified.

Unhealthily dietary pattern

- Red meat
- Processed meat
- Butter
- Potatoes
- Refined grains
- High-fat dairy
- Sweets

Healthy dietary pattern

- Vegetables
- Fruits
- Legumes
- Whole grains
- Low-fat dairy
- Poultry
- Fish/seafood

Factor loadings for foods loaded on the two major dietary patterns identified from the FFQ

Results

Correlates of maternal diet during pregnancy – multivariate analysis

Variables		Unhealthy dietary pattern [-4.25,-1.37]	Mixed [-1.37,-0.44]	Healthy dietary pattern [-0.44,4.42]	p
Maternal age		436 (33.4)	440 (33.7)	430 (32.9)	0.05
[years]	≤30	296 (35.4)	279 (33.3)	262 (31.3)	
Marital status		130 (29.1)	153 (34.3)	163 (36.5)	0.03
	>30	333 (31.9)	351 (33.6)	361 (34.5)	
Marital status		97 (38.8)	87 (34.8)	66 (26.4)	<0.001
	Married	261 (28.9)	303 (33.5)	340 (37.6)	
Maternal education		17 (56.7)	4 (13.3)	9 (30)	0.03
[years of education]	≤9	153 (42.4)	130 (36)	78 (21.6)	
Employment status in the 1 st trimester		231 (31.9)	233 (32.2)	260 (35.9)	0.01
	No	296 (34.1)	300 (34.6)	271 (31.3)	
Socio-economic status		40 (42.1)	32 (33.7)	23 (24.2)	0.01
	Medium	90 (28.6)	97 (30.8)	128 (40.6)	
Place of residence [thous. inhabitants]		153 (31.2)	165 (33.7)	172 (35.1)	0.01
	>500	115 (42.9)	85 (31.7)	68 (25.4)	
Pre-pregnancy BMI [kg/m ²]		65 (33.5)	62 (32)	67 (34.5)	0.001
	<10	102 (29)	128 (36.4)	122 (34.7)	
Gestational weight gain		327 (35)	298 (31.9)	308 (33)	0.3
	(18.5-24.99)	47 (41.2)	40 (35.1)	27 (23.7)	
Pregnancy complications		54 (22.6)	96 (40.2)	89 (37.2)	0.9
	≥25	136 (32)	145 (34.1)	144 (33.9)	
Cotinine level in 1 st trimester		177 (31.9)	194 (35)	183 (33)	0.02
	Recommended	88 (39.3)	74 (33)	62 (27.7)	
Alcohol consumption in pregnancy		178 (33)	181 (33.6)	180 (33.4)	0.6
	No	251 (33.4)	254 (33.8)	246 (32.8)	
Child gender		317 (32.8)	332 (34.4)	317 (32.8)	0.1
	≤10ng/ml	51 (45.5)	36 (32.1)	25 (22.3)	
Gestational weight gain		397 (32.9)	407 (33.7)	403 (33.4)	0.6
	>10ng/ml	29 (34.9)	31 (37.3)	23 (27.7)	
Pregnancy complications		178 (31.2)	212 (37.1)	181 (31.7)	0.1
	No	192 (34.3)	174 (31.1)	193 (34.5)	
Child gender					
	Male				
	Female				

Conclusions

Diet is a complex exposure variable, which calls for multiple approaches to examine the relationship between diet and disease risk. Dietary pattern analysis is one of these approaches. The study results highlight the need for educational programs and interventions focused on healthy diet quality during pregnancy.

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