Assessment of negative factors affecting the intestinal microbiota in people with excessive body mass compared to people with normal body mass

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INTRODUCTIONS

- Intestinal microbiota plays a significant role in the human body;
- It is estimated that the number of microorganisms in the digestive tract is over 10^{14} CFU (colony forming units), forming a microbiota;
- A range of negative factors may promote dysbiosis, which leads to many diseases and metabolic disorders

THE AIM OF THE STUDY AND HYPOTESIS

- The aim of the study **is to assess how often factors negatively influencing intestinal microbiota occure in people with excessive body mass compared to people with normal body mass.**
- Hypotesis: People with BMI (Body Mass Index) ≥ 25 kg/m^2 present more factors leading to dysbiosis and dysbiosis-related health problems compared to people with normal BMI.

MATERIALS AND METHODS

- The study involved volunteers aged 18 - 65 years:
  - 582 people with normal BMI 18.5 - 24.99 kg/m^2 **„E-BMI" group**
  - 538 people with BMI ≥25 kg/m^2 **„N-BMI" group** ;
- The study was conducted with the use of the authors' survey using the Computer-Assisted Web Interviewing method;
- The surveys were collected between February and June 2020;
- The questionnaire included questions on sociodemographic characteristics, level of physical activity, frequency of smoking, and stress. Also the frequency of use of NSAIDs (non-steroidal anti-inflammatory drugs) and PPIs (proton pomp inhibitors) was examined;
- Statistica for Windows 10.0 software (StatSoft, Kraków, Poland) was used to analyze the results. For statistics the Fisher test was implemented. P-value <0.05 was considered significant.

RESULTS

Characteristics of group (n=1120)

Characteristics of group	E-BMI (n=538) (%)	N-BMI (n=582) (%)
Gender		
Female	474 (88.1)	553 (95)
Male	64 (11.9)	29 (5)
Age (years)		
18-24	50 (9.3)	101 (17.4)
25-34	218 (40.5)	279 (47.9)
35-44	169 (31.4)	149 (25.6)
45-54	72 (13.4)	36 (6.2)
55-65	29 (5.4)	17 (2.9)

Characteristics of group (n=1120)

Characteristics of group	E-BMI (n=538) (%)	N-BMI (n=582) (%)
	Education level	
Primary	5 (0.9)	7 (1.2)
Lower secondary	24 (4.5)	18 (3.1)
Upper secondary	136 (25.3)	114 (19.6)
Student	45 (8.4)	71 (12.2)
Higher	308 (57.2)	348 (59.8)
PhD Student	4 (0.7)	5 (0.9)
PhD or higher	16 (3)	19 (3.2)
	Economic status	
Very bad	8 (1.5)	3 (0.5)
Bad	13 (2.4)	20 (3.4)
Moderate	253 (47)	232 (39.9)
Good	214 (39.8)	282 (48.5)
Very good	50 (9.3)	45 (7.7)

Level of physical activity (n=1120)

Level of physical activity	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
Sedentary	239	44.4	177	30.4	
Moderate	273	50.8	345	59.3	χ^2=29.39; **p<0.0001**
High	26	4.8	60	10.3	

The frequency of smoking cigarettes (n=1120)

The frequency of smoking cigarettes	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
Do not smoking	324	60.2	393	67.6	
Has smoked in the past	92	17.1	81	13.9	
<5 cigarettes a day	30	5.6	28	4.8	$\chi 2=10.31$; **p=0.0356**
5-20 cigarettes a day	83	15.4	78	13.4	
> 20 cigarettes a day	9	1.7	2	0.3	

The frequency of alcohol consumption (n=1120)

The frequency of alcohol consumption	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
No	184	34.2	220	37.8	
Less often than once a week	213	39.6	237	40.7	
1-2 times a week	106	19.7	94	16.2	$\chi 2=3.73$; p=0.4440
3-4 times a week	27	5	24	4.1	
5 times a week or more	8	1.5	7	1.2	

The frequency of stress (n=1120)

The frequency of stress	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
No	22	4.1	24	4.1	
Less often than once a week	104	19.3	137	23.5	
1-2 times a week	148	27.5	174	29.9	$\chi 2=5.66$; p=0.2259
3-4 times a week	130	24.2	118	20.3	
5 times a week or more	134	24.9	129	22.2	

Diagnosis of the disease (n=1120)

Diagnosis of the disease other than excessive body mass	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
Not diagnosed	350	60.1	289	49.7	**p=0.0004**
Diagnosed	232	39.9	293	50.3	

NSAID drugs (n=1120)

NSAIDs intake	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
No	82	15.2	101	17.4	p=0.3737
Yes	456	84.8	481	82.6	

Frequency of taking NSAIDs (n=1120)

Frequency of NSAIDs intake	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
Do not take	82	15.2	101	17.4	
Once a month or less	194	36.1	223	38.1	
Few times a month	171	31.9	175	30.1	
Once a week	25	4.6	26	4.5	$\chi 2=7.74$; $p=0.2580$
Few times a week	43	8	33	5.7	
Once a day	18	3.3	12	2.1	
More than once a day	5	0.9	12	2.1	

PPI drugs (n=1120)

PPIs intake	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
No	398	74	472	81.1	**p=0.0050**
Yes	140	26	110	18.9	

Frequency of taking PPIs (n=1120)

Frequency of PPIs intake	E-BMI (N=538)		N-BMI (N=582)		p-value
	N	%	N	%	
Do not take	398	74	472	81.1	
Once a month or less	40	7.4	32	5.5	
Few times a month	27	5	21	3.6	
Once a week	4	0.7	2	0.3	$\chi 2=13.66$; **p=0.0337**
Few times a week	12	2.2	11	1.9	
Once a day	53	10	34	5.9	
More than once a day	4	0.7	10	1.7	

CONLUSIONS

- People with BMI $\geq$25 kg/m^2 present more factors which may result in dysbiosis and lead to dysbiosis-related health problems compared to people with normal BMI.

CLINICAL INPLICATIONS

- To prevent the negative health effects resulting from dysbiosis, patients should be educated in the range of proper diet, physical activity and lifestyle.

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Thank You for Your attention!

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