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The Impact of Food Behaviour, Lifestyle and Societal Influences in the Health & Emotional Status of a Romanian High School Population

Iuliana VINTILA¹

Abstract

A complex social investigation of food behaviour, lifestyle and societal influences impact in the health & emotional status for a Romanian high school population of teenagers were conducted using input data from Food Behavior and Lifestyle Questionnaire (FBLQ). The impact of occidental model and media information were investigated against the traditional Romanian family model. The present study show that in condition of a good knowledge about healthy eating and no important restriction of healthy food accessibility the greatest influence in food choices, eating/lifestyle pattern were exercised by the parental family (63.3%), followed by media (29.4%) and friends (19.3%). The relevance of the traditional good family model of food choices is dominant but the eating habits (frequency of breakfast, regular meal) and lifestyle (sport, walking and smocking) are already “contaminated” from media social models.

Keywords: food behaviour; lifestyle; teenagers; societal influences; Lifestyle Questionnaire (FBLQ).

Introduction

Serious modification of the anthropometrics characteristics and food attitudes among youth population associated with serious health problem and decreasing of school interest & performance became a crude reality in last decades due to societal and moral values change and serious contagiousness with fashionable eating habits and lifestyle via internet and social networks. The fashionable contamination from the occidental eating style is a reality in the past decades and the traditional influence of family or school is minimizing and percept as old

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tasting. Different factors have been shown to influence eating and lifestyle patterns: age (Anderson and Hunt, 1992), gender (Verbrugge, 1985), body weight (Spyckerele, Herbeth & Deschamps, 1992), dieting (Contento, Michela & Williams 1995) or drinking (Rimm and Ellison, 1995) and social status (Anderson et al., 1998). The most common reasons suggested to influence the food choices in young population include changes in living arrangements (Sakamaki et al., 2005), financial resources (Xie et al., 2003), increased availability of convenience and fast food (Story, Neumark-Sztainer & French, 2002). Other reasons for dietary choices include life experiences (social values, cultural pattern), family psychological and physiological background, beliefs and expectations regarding food eating style (Johnson & Birch, 1994) and (Steptoe et al., 1995). Food choice patterns established during youth will likely influence future behaviours (Kelder et al., 1994). Factors such taste and flavour have consistently been reported as major influences in food choice (Clarke, 1998; Giskes, 2005; Shannon et al., 2002). Other factors include cost and accessibility of the food, and the perceived healthfulness or energy potential of the food (Shannon et al., 2002; Story, Neumark-Sztainer & French, 2002). Recent studies have revealed relationships between body image and adolescent eating behavior (Contento, Michela & Williams, 1995; Kolodinsky et al., 2007). Young population eating habits also appear to be influenced by the family, media, and friends (Birch and Fisher, 1998; Giskes et al., 2005; Kolodinsky et al., 2007). Also, international studies have indicated that many adolescents find difficult to follow healthful eating recommendations and make finally the easy choice of accessible and convenience fast-food items (Birch and Fisher, 1998). The Romanian Ministry of Public Health is responsible for the health policy, health programs, and investments in public establishments. The main regulatory law in Romania for healthy eating in schools is 128/2008, Law about the healthy eating in the pre-university establishments and about the interdiction of fast-food products in schools (Vintilă & Chicos, 2004). The present study research was conducted with a youth population from a Romanian high school with one weekly hour of nutrition and special curricula for public catering specialisation. The objective of the research study is to investigate the food behavior and lifestyle for a Romanian high school sample (N=109), establish the societal influences and self-appreciation of food behaviour health & emotional impact and change intention.

Methods of conducting social investigation

109 teenager from the terminal year of a high school college positioned in the centre of Romania (47boys and 62 girls) aged 17-19 years random selected, complete the questionnaire concerning activities related to eating behavior and lifestyle, societal influences, self-appreciation of food behaviour health &

emotional impact and change intention. According to the internal framework of Romanian pre-university school the present research was unnecessary to be reviewed by the Institutional Review Board (IRB). The survey was conducted during the period December 2010–January 2011 and the participation was not compulsory. The students were assured of complete anonymity. The volunteered youth complete the survey in a time between 30 and 40 min. A general characterisation of the investigated group was socio-demographic and anthropometric: age, gender, height, weight, geographic origins, international mobility and accessibility of healthy food.

Body mass index (BMI) was calculated using the formula $BMI = \text{weight (kg)} / \text{height (m)}^2$ from self-reported heights and weights. The classification from BMI were realised in underweight ($BMI < 18$), normal weight ($BMI = 18-25$), obesity predisposal ($BMI = 25-30$), and obesity grade (grade I $BMI = 30-35$, grade II $BMI = 35-40$, grade III $BMI > 40$).

Questionnaire

A Food Behavior and Lifestyle Questionnaire (FBLQ) were constructed to assess food behavior integrated in a lifestyle with influences, impact and intention of food behavior change variables. The questionnaire divided in two parts, a quantitative part with 44 questions and a second qualitative part with other 10 questions consisting in perception & attitude variables. Lifestyle variables, food behaviours, impact & change intention and societal influences were assessed with the following instruments: (1) a 5-point Likert scale (“none, never” to “very slight, a little”, “medium”, “important”, “high”, 1-3 score numbers represent low impact, societal influences or intention and 4-5 high impact, societal influences or intention), (2) overall food behaviour/lifestyle rated with a bipolar assessment scale (negative response/positive response).

The integrative food behavior status was investigated from two components: dietary habits and eating pattern. The positive or healthy dietary habits were assessed with vegetable and fish intake and the negative or unhealthy dietary habits with the red meat, pizza, carbonated drinks, alcohol and coffee intake. The references of consumption were established according with FAO/OMS recommendation. The eating patterns variables were considered as followings: breakfast, regular meals, and daily energy intake. The lifestyle variables were considered as followings: daily sport activities, number of minutes daily walking, smoking. The details and reliability of the questionnaire were tested in an initial pre-sampling group of 33 high school teenagers. Internal consistency reliability coefficients were calculated using the Cronbach α method for constructs with Likert-type scales food behaviour societal influences, impact and intention to change). The internal consistency reliability coefficient was acceptable for Cronbach $\alpha = 0.73$.

Statistical analysis

The data collected was processed using a Statistical Package for the Social Sciences SPSS Statistics 17.0 (SPSS, Inc. Chicago, IL) and Statistical Analysis System 8.0 for Windows (SAS Institute, Cary, NC, 1999). Responses were analyzed using Chi-square (X^2) test and percent (%) ratios according to socio-demographic and BMI category. Chi-square and Fisher tests were used to assess the statistical significance of the comparisons. Small chi-square values indicate a good fit between the observed (experimental) data and hypothesized model. Pearson’s correlation coefficients between BMI (F2) and 10 variables of food behavior (F1 enegy intake, F3 breakfast, F4 regular meal, F5 vegetable consumatio, F6 Fish consumption), lifestyle variables (sport), societal influences (F8 family, F9 friends, F10 media) and change intention (F11) were calculated using SAS. Student’s *t*-test for means and reliability analysis was employed to test the reliability of the questionnaire scale. A level of $p < 0.05$ was set to determine statistical significance.

Results and discussions

Sample characteristics

The socio-demographic and anthropometric characteristics of the sample (N = 109) were presented in Table1.

Table 1. Socio-demographic and anthropometric data for Romanian high school students sample (N = 109)

Socio-demographic and anthropometric characteristics	Total,%	Boys(%)	Girls(%)	Statistic values chi square/ Asymp sig/-df/Fisher test
Gender	100	43.1	56.9	-
Geographic origin				3.148/0.076/1/ns
South	96.3	43.1	53.2	
East	3.7	0	3.7	
BMI				3.151/0.369/3/ns
Underweight	16.5	4.6	11.9	
Normal	73.4	34.9	38.5	
Overweight	9.2	3.7	5.5	
Grade I obesity	0.9	0	0.9	

International mobility				BMI
None	76.1	26.6	49.5	Underweight
1-2 visited countries	21.1	14.7	6.4	Normal
More than 2 visited countries	3(2.8)	1.8	0.9	Overweight
Healthy food accessibility(in financial way)				Grade I obesity
Low	51.4	17.4	33.9	
High	48.6	25.7	22.9	

The sample gender distribution was 43.1% boys and 56.9% girls. Boys mean age (18.57 ± 0.3 years, $p > 0.05$) was not significantly different from girls mean age (17.85 ± 0.2 years respectively, $p > 0.05$) among the same terminal year of study. Mean BMI for total sample were 20.80 ± 3.10 kg/m², significantly lower for girls (20.48 ± 3.29 kg/m², $p < 0.05$) than for boy's group (21.23 ± 2.80 kg/m², $p < 0.05$). The BMI range was 15.40-28.00 kg/m² in boy's case and 19.2–30.48 kg/m² in girl's case. In most cases, we identify a body mass control more strict for the girl's and a restricted diet self-imposed.

Most teenager (80/109, 73.4%) have the correct weight. About 9.2% of the teenager were classified with obesity predisposal (overweight), most of them were girls (6/109, 5.5%). A small percentage (1/109, 0.9%) were classified with grade one obesity, a girl (BMI 30.3 kg/m²). The prevalence of overweight and obesity was found to be higher in boys than in girls in other countries (Berg et al., 1992; Janssen et al., 2004; Johnson and Birch, 1994). The genetic basis and the most appropriate model of girls to family food behavior, with frequent obedient attitude to the old female pattern 'overweight and pretty' explain the results obtained in our present social investigation. Author presume also that a non-conciseness attitude of overweight mothers to entrain their girl in the same world in which they exist, in order not to be alone in face of frustration and social negative reaction, is also a unspoken explanation of 'so overweight mother, so girl'.

The overall influence of other cultures generated by the international mobility assess with the number of foreign visited countries is insignificant, because 76.1% do not visit a foreign country, most of them girls and only 3 teenager visit more than 2 others countries, one of them declare eight foreign contries visited.

In addition, 48.6% of questionnated sample consider that the healy foods are financial accesible and the finding impose a prudent consideration of financial restriction as a significant cause of non-healthy eating habits.

From eating style point of view, more than half (64.2%) of the teenager sample ate breakfast every day (Table 2) but an overwhelming part of sample (84.4%) have no regular meals.

Table 2. Eating behavior and lifestyles variables for Romanian high school students sample (N=109)

Eating behavior and lifestyles variables		Total (%)	Boys (%)	Girls (%)	Statistic values chi square/ Asymp sig/ df/Fisher test
Breakfast	Yes	64.2	29.4	34.9	0.5370.474/1/ns
	No	35.8	13.8	22	
Regular meal	Yes	15.6	5.5	10.1	0.537/0.478/1/ns
	No	84.4	37.6	46.8	
Energy intake	1500-2000kcal	13.8	6.4	7.3	0.530/0.767/2/ns
	2000-2500kcal	55	22	33	
	2500-3000kcal	31.2	14.7	16.5	
Red meat consumption	Yes	70.6	35.8	34.8	6.064/0.048/2/ns
	Up to 250 g	68.8	34.9	33.9	
	More than 250 g	1.8	0.9	0.9	
	No	29.4	7.3	22.1	
Vegetable consumption	Yes	96.4	39.4	57	5.531/0.036/2/ns
	Up to 400 g	61.5	25.6	35.9	
	More than 400 g	34.9	13.8	21.1	
	No	3.6	3.6	0	
Fish meat consumption	Yes	46.8	18.4	28.4	1.623/0.444/2/ns
	Up to 100 g	27.4	9.2	18.2	
	More than 100 g	19.4	9.2	10.2	
	No	53.2	24.8	28.4	
Carbonated beverages consumption	Yes	95.4	43.1	52.3	7.181/0.028/2/ns
	Up to 50 cl	20.2	3.7	16.5	
	More than 50 cl	75.2	37.6	37.6	
	No	4.6	1.8	2.8	

Alcohol consumption	Yes	30.3	14.8	14.5	28.91/0.00/2/ns
	Up to 25 cl	19.3	5.6	3.7	
	More than 20 cl	11	9.2	1.8	
	No	69.7	18.3	51.4	
Coffee consumption	Yes	56	27.5	28.5	8.2/0.017/2/ns
	Up to 5 cl	25.7	8.3	17.4	
	More than 5 cl	30.3	19.3	11	
	No	44	15.6	28.4	
Sport	Yes	22.9	17.4	5.5	14.3/0.00/1/ns
	No	71.1	25.7	51.4	
Walking	Yes(min.30min)	80.7	30.3	50.5	5.88/0.015/1/ns
	No	19.3	12.8	6.4	
Smocking	Yes	32.1	16.5	15.6	1.451/0.228/1/ns
	No	67.9	26.6	41.3	

The breakfast pattern is traditional in the European culture, with 84% of French, 62.2% of British, 76% of all European students and 77.9% of Turkish students (Erenoglu, Ayranci & Son, 2006; Monneuse, Bellisle & Koppert, 1997). Girls group have a greater frequency of regular meals but only 10.1% have the habit of „stay and eat” at fixed hours, due to the scholar program and snacking preference. Breakfast frequency is also related with the family income because the parents with successful carriers especially in private sector also well remunerated spend less time in family and reduce the parental influence model, which is replaced by the media, school and friends influences. Contrary, in our study the maternal model is dominated, because of the societal tradition regarding important role of women’s in the family eating pattern. The results are in line with the finding show in recent studies regarding the family impact and socio-economic deprivation associated with breakfast consumption (Moore & Harre, 2007; West & Sweeting).

The correct energy intake is also assured in most than half of sample cases (55%), with a greater fit with the correct energy intake in girl’s case (33%). Fish and vegetable consumption were used as markers of positive food choices. 34.9% from total sample have correct daily vegetables consumption (more than 400g). 53.2% from total group do not consume fish, mostly boys (28.4%). The red meat eating preference was used as marker of negative food choices. 68.8% of

total sample respond that they consume up to 250g red meat in the weekly menus and 29.4% do not ate red meat.

Only 22.9% of teenager makes a regular form of sport and 80.7% from them respond yes to a daily walking habit of more than 30 minutes. The overfeeding (31.2%) associated with lack of sport (71.1%) and minimum move habits (19.3%) in face of virtual activities are correlated with the percent of obesity predisposal (9.2%) and overweight (0.9%). In addition, 32.1% of teenager smoke already (more boys 16.5% than girls 15.6%) correlated with alcohol (30.3%, 14.8% male) and coffee consummation (56%, 30.3% more than a cup in a day). 95.4% declare that they regular drink carbonated beverages, most of them in large quantities (more than 50cl, 75.2%).

The top of the food behavior influences (Table3) is dominated by family (63.3%), followed by media (29.4% total subjects were highly influenced in food choices by media programs), which is not still a strong “professor” of nutrition style of this age. In all cases, boys are less influenced by the societal models than girls, who generate the important part of the highly influenced groups, especially in case of family influences (39.4%) and media models (22.9%). The results from the present research add supplementary support to the reviews in which a positive correlation between parental food behaviour and eating behaviour of teenager was reported (Bagley, Salmon & Crawford, 2006; Pearson, Biddle and Gorely, 2008).

Table 3. Factors of food behavior influence for Romanian high school students sample (N=109)

Factor of influence		Total(%)	Boys(%)	Girls(%)	Statistic values chi square/ Asymp sig/-df/Fisher test
Family	Low	36.7	19.3	17.4	2.267/0.132/1/ns
	High	63.3	23.9	39.4	
Friends	Low	80.7	35.7	45.	0.268/0.605/1/ns
	High	19.3	17.3	12	
Media	Low	70.6	36.7	33.9	8.336/0.004/1/ns
	High	29.4	6.4	22.9	

The self-appreciation of the actual impact on the healthy and emotional status and intention of eating change behaviour is presented in Table 4.

Table 4. Food behaviour healthy & emotional impact and intention of change for Romanian high school students sample (N=109)

Factor of self-appreciation		Total (%)	Boys (%)	Girls (%)	Statistic values chi square/ Asymp sig/-df/Fisher test
Healthy impact	Low	67.0	29.4	37.6	0.046/0.830/1/ns
	High	33	13.8	19.3	
Emotional impact	Low	65.1	31.2	33.9	1.888/0.169/1/ns
	High	34.9	11.9	23	
Eating behavior change intention	Low	67	34.9	32.1	7.196/0.007/1/ns
	High	33	8.3	24.8	

The consciences of health nutrition impact is, in most of half cases (67%), at a low level and also a direct correlation between food & eating habits and emotional status is not clear enough in more than half subjects (65.1%). Girls are more attentive and sensitive to nutrition impact on their healthy status (19.3%), especially in the food behaviour emotional impact (23%). The consciences that they make mistake in eating style and food choices is not significant because only 33% report a strong future intention to change the actual food habits, mostly girls (24.8%). Individual and groups food behaviour is also reported in others studies that is strongly correlated with health status, motives and emotions, food traditions (Giskes et al., 2003; Kolodinsky et al., 2007).

The Pearson's correlation coefficients between food behaviour & lifestyle, societal influences and intention of food behavior change variables are presented in Table 5.

A negative correlation between energy intake and fish consumption [$r(1,6) = -0.096$] and media [$r(1,10) = -0.159$] negative influences are significant. BMI sample distribution decrease when the amount of vegetable and fish weekly consumption increase [$r(2,5) = -0.161$ and $r(2,6) = -0.013$ respectively], family influence were greater and intention to food behaviour change were strong [$r(2,8) = -0.013$ and $r(2,11) = -0.017$ respectively]. The strongest correlation of having breakfast habit is show with the regular meal behaviour [$r(3,4) = 0.215$] but regular meals are associated with a high BMI value [$r(4,2) = 0.22$]. Vegetable consumption is strongly related with a important family influences [$r(5,8) = 0.207$] and fish consumption with media influences [$r(6, 10) = 0.142$], including school nutrition programs.

Table 5. Pearson's correlation coefficients between BMI and food behaviour & lifestyle, societal influences and intention of food behavior change variables (N=109)

Pearson Correlation(r) Sig. (2-tailed)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
F1	1	.127	.54	.38	.143	-.096	.079	.074	-.091	-.158	-.102
Energy intake		.189	.110	.698	.138	.321	.411	.445	.346	.100	.289
F2	.127	1	.125	.022	-.161	-.013	.119	-.013	.014	.023	-.017
BMI	.189		.196	.819	.095	.895	.219	.892	.882	.809	.860
F3	.154	.125	1	.215*	.116	-.047	.043	-.030	-.027	.092	-.003
Breakfast	.110	.196		.025	.229	.629	.657	.759	.778	.343	.972
F4	.038	.022	.215*	1	.041	-.063	.006	-.058	.026	-.017	.039
Regular meals	.698	.819	.025		.672	.516	.950	.546	.785	.861	.684
F5	.143	-.161	.116	.041	1	.145	-.038	.207*	.014	.112	.099
Vegetable	.138	.095	.229	.672		.131	.693	.030	.885	.248	.307
F6	-.096	-.013	-.047	-.063	.145	1	.007	.068	.038	.142	.000
Fish	.321	.895	.629	.516	.131		.941	.481	.694	.141	1.000
F7	.079	.119	.043	.006	-.038	.007	1	-.020	.031	.005	.104
Sport	.411	.219	.657	.950	.693	.941		.839	.753	.963	.280
F8	.074	-.013	-.030	-.058	.207*	.068	-.020	1	.131	-.026	.022
Family influence	.445	.892	.759	.546	.030	.481	.839		.174	.788	.817
F9	-.091	.014	-.027	.026	.014	.038	.031	.131	1	.295*	.135
Friends influence	.346	.882	.778	.785	.885	.694	.753	.174		.002	.161
F10	-.158	.023	.092	-.017	.112	.142	.005	-.026	.295*	1	.266*
Media influence	.100	.809	.343	.861	.248	.141	.963	.788	.002		.005
F11	-.102	-.017	-.003	.039	.099	.000	.104	.022	.135	.266*	1
Intention to change food behaviour	.289	.860	.972	.684	.307	1.00	.280	.817	.161	.005	

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Also, media influences is strongly positive correlated with friend influences and intention to food behaviour change, which suggest an important “influence weapon” in fighting against non-healthy teenager food habits. Media influence is greater in vegetable and fish consumption influencing behaviour, because a lot of actual publicity pay by the public Minister of Health is orientated in this direction. Nutrition knowledge and positive food behaviour is not strongly correlated because in the teenager experience doesn't exist yet example of direct related food disease and the strongest influence were family tradition and societal marketing. The present results are in line with the empirical studies which investigate the role of nutrition knowledge in teenager food behaviour (Giskes et al., 2003; Shepherd & Towler).

Conclusions

The prevalence of overweight (9.2%) and grade one obesity (0.9%) was relatively high, mostly among the girls group (5.5% overweight, 1 girls with grade I obesity), and must be taken into account. In similar studies, the overweight was found to be more frequent in low economic zones in sixth-grade French adolescents (Klein-Platat et al., 2003) and Australian adolescents of lower socio-economic status (O'Dea & Caputi, 2001). The values pattern of Romanian adolescents has dramatically changed during the last twenty years after the 1989 revolution, with preference toward static activities (television, moving, computer surfing) associated with fashionable and accessible fast food. The author perception is that the fast food culture is viewed as a “windows” toward the developed countries and an easy and accessible way to escape from a society which give them a less valorisation, few motivations and no secure future. The illusion of being there, in a successful culture, gives the temptation to accessible and convenient fast food, which represent a strong symbol of occidental democratic values.

The majority of investigated sample do not make a strong correlation between the eating habits and health & emotional status but they are deeply concerned to avoid a non-fitted social image (rejected overweight teenager) with low power in youth group hierarchy. Some research suggests that healthful eating among adolescents may be more a result of wanting a fashionable slim body than construct and preserve the health status (Contento, Michela & Williams, 1995). The present study finding suggests that adolescents, regardless solid food knowledge, have a serious problem to practice healthful eating style, which agrees with similar findings from both local and international studies (Birch & Fisher, 1998; Croll., Neumark-Sztainer & Story, 2001).

Social networking foods were associated with friends and fashion, whereas healthful foods were perceived as an old-fashion habit and family-dependence, but the food choices are strongly associated with the maternal food behaviour

pattern. The relevance of the traditional good family model of food choices is dominant in the present social investigation (excepting carbonated beverages) but the eating habits (frequency of breakfast, regular meal) and lifestyle (sport, walking, smoking) are already “contaminated” from media social models.

Education and social professionals could have a key role in promoting good food behavior among adolescents and their families. The practical application of the dietary guidelines and norms in the daily menus created in family, canteen or restaurants may have a very strong force in modifying eating attitude and food choices. The public mass-media and their internet extension should promote a powerful social model with good lifestyle pattern, applied in the daily adolescent reality from family, school and society.

Limitations

The self-reported height and weight data from teenage populations provides valid indices of true height and weight; some subjects may have reported inaccurate information, underestimated their weight and up estimated their height, especially in boy’s cases. Self-reported data of international mobility and financial food accessibility may be subjected of error in super estimation. Self-reported behavior such as vegetable, fish and red meat consumption may be subject to recall error. Self-reported level of societal influences was subjected to underestimated, especially in boy’s cases regarding especially family influence.

Perspectives

Further research is already conducted by the author among university students population with and without nutrition knowledge for detecting the multifactorial dependence between food behaviour and academic performance.

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