*1st version*

Please Cite as:

Burusic, J., Sakic, M., Koprtla, N. (2014). Parental Perception of Adolescent Health Behaviors: Experiences from Croatian High Schools, *Health Education Journal*, 73(3), 351 - 360

Parental Perception of Adolescent Health Behaviors: Experiences from Croatian High Schools

Burusic Josip1, Sakic Marija1 & Koprtla Natalija2

# 1Institute of Social Sciences Ivo Pilar, Zagreb, Croatia

# 2Department of Psychology, Croatian Studies, University of Zagreb, Croatia

Author Note

Correspondence concerning this paper should be addressed to Josip Burusic, Ivo Pilar Institute of Social Sciences, Marulicev trg 19, 10000 Zagreb, Croatia. Email: Josip.Burusic@pilar.hr, Phone: +385 1 48868 32, Fax: +385 1 4828 296

**Abstract**

**Objective**: The aim of this study was to explore the parental perception of adolescent health behaviors and to examine to what extent parents' perception of their children’s health behaviors is determined by some family’s socio-demographic characteristics.

**Method**: Participants in the study were 605 parents. They completed questionnaires in which they rated whether different health-risk behaviors are present in their children (i.e. smoking, alcohol consumption, drug use, risky sexual behavior, insufficient physical activity, unhealthy eating habits and obesity). Parents also provided information on family’s socio-demographic characteristics.

**Results**: The results show that parents rate insufficient physical activity and unhealthy eating habits as the most pronounced problems in their children, while they rate risky sexual behavior and drug use as the least pronounced. Parents estimate that insufficient physical activity and unhealthy eating habits are significantly more pronounced among girls than among boys. The results of factor analysis reveal that, from the parents’ perspective, adolescent health-risk behaviors can be grouped into those pertaining to unhealthy habits and to addictive and risk behaviors. Parents rate that behaviors reflecting unhealthy lifestyle are significantly more present among girls than among boys. Regression analyses showed that family’s living standard is the only significant predictor of unhealthy habits and addictive and risk behaviors.

**Conclusion**: When observed from parental perspective, adolescent health-risk behaviors can be grouped into different categories, and parents observe certain differences in these behaviors between boys and girls. The most important determinant of adolescent health behaviors is family’s living standard.

***Keywords:*** health behavior, parental perception, unhealthy habits, addictive behavior

Parental Perception of Adolescent Health Behaviors: Experiences from Croatian High Schools

Health behavior is a term which encompasses various patterns of behavior and actions pertaining to eating habits, physical activity, concern for physical well-being, as well as certain addictive behaviors. In general, health behavior refers to all those actions, or lack of thereof, which directly affect our health status and well-being [1]. An important finding of studies that have examined children’s and adolescents’ health behavior and habits is that certain health behaviors are learned – usually at an early age and primarily at home. For example, in the case of eating habits, parents serve as primary role models and they affect the eating habits of their children by encouraging them to eat certain types of food or passively allowing certain (other) types of food in daily meals [2]. Parents are also the primary food providers in the household and they make decisions concerning food preparation, but also those concerning the ways and conditions in which the food is consumed [3, 4]. Children’s eating habits are therefore related to the eating habits of their parents [5] and overweight children more frequently have parents with weight issues [6]. Wang, Beydoun, Li, Liu, & Moreno [7] conducted a comprehensive meta-analysis in which some methodological shortcomings of previous individual studies were controlled, primarily those related to the sample structure and size. Their results indicate that the parental influence on the eating habits of adolescents is potentially weaker than has previously been assumed. Hence, it is recommended that future studies should focus more on the possible moderators of parental influence on the eating habits of their children, with accurate parental perception of children’s behavior being one potentially important factor.

Besides food-related activities, some studies have focused on children’s and adolescents’ physical activity. These studies are based on the assumption that children whose parents are more physically active will be more physically active themselves and that parental interest in physical activity will increase the level of physical activity in their children [8]. Madsen, McCulloch, and Crawford [9] demonstrated a positive relationship between mere parental perception of their daughters’ physical activity and the tendency of girls to increase their level of physical activity. In a comprehensive report, Brown, Scragg, and Quigley [10] summarized a number of studies that support or contradict the influence of parents and certain family characteristics on children’s eating habits and physical activity. The majority of empirical studies show that parental physical activity is positively related to the physical activity of their children, but an even more consistent finding throughout different studies is that parental support may have a more important role.

Even when it comes to addictive behaviors, some authors assume that certain socialization experiences within the family predetermine children to become early alcohol and tobacco users. In a study focusing on the early use of alcohol and tobacco and characteristics of parental behavior, Jackson, Hendriksen, Dickinson, and Levine [11] conclude that parents serve as role models for their children. In addition, parental use of alcohol and tobacco makes these products more available to children and they start adopting positive attitudes towards these substances early on. In this context, a number of studies clearly demonstrated a relationship between frequency of cigarettes smoking in children and frequency of smoking in parents and older siblings [e.g.12]. The probability that children will smoke cigarettes increases with the number of role models (significant others) in child’s surrounding who smoke [e.g. 13].

Since parents, as significant others, play an important role in the formation of positive patterns of health behavior in their children, it is important to determine how they perceive and evaluate these behaviors in their children. The majority of previous studies have focused on the parental perception of the problem of overweight in their children and other weight-related issues, such as junk food consumption, reduced physical activity, etc. In some studies an interesting trend is revealed – parents tend to underestimate weight-related problems in their children and they tend to do this even when these problems are clearly evident [14-16]. For example, in one study, nearly half of the parents (43%) stated that their children’s weight was appropriate, 53% denied having problems controlling the food their children eat, and only 5% of them believed that an increase in physical activity was a good way to control the child’s weight [16]. Some studies show that parents recognize that overweight and obesity are general problems among children and adolescents, but they tend to deny it is a problem in their child [15, 16]. This is the case even when parents have a basic knowledge about healthy eating habits, e.g. when they are aware of the importance of avoiding sugar and fat in food and of the possible health consequences of being obese. In addition, it seems that parents avoid assigning the label of obesity to their children even when anonymity is ensured in the study. This behavior clearly indicates that parents, deliberately or unconsciously, underestimate their child’s weight problems. Even the majority of those parents who accurately diagnose their children as obese believe that this is a transient problem and deny the possibility that obesity in adolescence might continue into adulthood [15]. Parental perception of health behavior of their children is an important precondition for their readiness to act in order to change their child’s negative health-related habits, which can lead to improvement in the child’s health and well-being [14,15].

The aim of the present study was to examine the parental perception of various health behaviors of their children. We sought to examine the prevalence of certain health behaviors and risks in adolescents, as observed by their parents. We have primarily focused on those behaviors that are most frequently assessed and studied in the context of adolescent health [17]. These include obesity, unhealthy eating habits, lack of physical activity and behaviors labeled as addictive or risk behaviors (i.e. drug use, alcohol consumption, smoking and sexual risk behaviors). Furthermore, an additional aim was to examine the basic structure of certain adolescent health behaviors when observed and assessed from parental perspective. Previous studies focused on individual health behaviors or groups of behaviors, mainly on the problems related with overweight, unhealthy eating habits and lack of physical activity on the one hand, and on addictive behaviors on the other [18-22]. In the present study, both types of health behaviors are examined, in order to empirically confirm the existence of separate latent dimensions that reflect two different types of parental concerns. It is hypothesized that two mutually independent dimensions exist – one relating to unhealthy habits and the other relating to more severe risks, such as addictive and similar behaviors. A detailed consideration of these potentially separate latent dimensions may be valuable for advising public health programs. Namely, it may provide useful information regarding the uniqueness or need for differentiation of various problems related to adolescent health when they are addressed by different interventions and programs.

Parental awareness of certain health behaviors and health risks in their children is the first step in planning possible interventions [23], regardless whether parents perceive different health behaviors as unique or differentiate them. However, the structure of parental perception of adolescent health behaviors is an important determinant of number and structure of public health interventions. It is also an important factor in understanding of the relation between different parental characteristics and adolescent health behaviors.

Finally, we examined whether the parental perception of presence of certain health behaviors and risks in their children depends on some socio-demographic characteristics of parents. A number of studies have clearly demonstrated that socioeconomic status (SES) is a significant predictor of health in adults [24]. Similar patterns of relations between socio-economical inequalities and health outcomes are observed in newborns and young children [25]. This rather unequivocal relation between socio-economical inequalities and health outcomes becomes less clear during adolescence. Some previous studies based on adolescent self-evaluations suggest that socio-demographic characteristics are important in the explanation of health behaviors. In general, the results indicate that health-risk behaviors are possibly more prevalent in adolescents from socioeconomically deprived families [21, 26-28]. However, contrary to what might be expected, Gray et al. [29] have found that certain family characteristics are not related with differences in the perception of health problems and do not contribute significantly to the prediction of some health outcomes. While the relation between family SES and children’s health has been extensively examined, the question whether parents’ SES is related to their perception of their children’s health behaviors remains unanswered. Therefore, in the present study we examined the contribution of some socio-demographic characteristics of parents and family in the explanation of parental perception of adolescent health behaviors. Specifically, we examined the potential relation between family structure, family’s living arrangements and self-rated living standard, parental educational status and the population size of the municipality in which the family lives and parental perception of different health behaviors of their adolescents. These characteristics were considered because they represent the basic determinants of family SES [24].

# **Methods**

**Participants**

Participants in the study were a convenience sample of parents with adolescent children who attended high schools located in six different cities in Croatia (i.e. Zagreb, Zadar, Rijeka, Ogulin, Šibenik, Buje). A total of 605 parents/guardians participated in the study, among which 442 are mothers.

**Measures**

Parents rated on a three-point Likert scale (1 – not at all present in my child, 3 – extremely present in my child) whether some health-risk behaviors are present in their child: smoking, alcohol consumption, drug use, risky sexual behavior, insufficient physical activity, unhealthy eating habits and obesity.

Parents also provided information about some socio-demographic characteristics: (1) family structure ( 1- two-parent families, 2 – single-parent families, 3 – adoptive families); (2) family’s living arrangements (1 – subtenants, 2 – living in social housing, 3 – lining in privately owned apartment, 4 – lining in privately owned house); (3) self-rated living standard of the family (from 1 – extremely poor to 5 – excellent); (4) mother’s and father’s level of education (1 – primary school, 2 – high school, 3 – college, 4 – university); and (5) population size of the municipality in which the family lives (1 – metropolis, 2 – large city, 3 – medium sized city, 4 – small sized city, 5 – village).

**Procedure**

The data used in this study were collected as a part of a larger project dealing with parents’ perception of their children’s health behaviors, social habits, peer relations and school behavior. Adolescents’ parents completed the questionnaires either at parent’s meetings in their child’s school or in their homes, returning them afterwards in sealed envelopes. Anonymity was ensured in order to obtain honest answers from parents regarding their perception of their children’s behavior.

# **Results**

Firstly, we explored the parental perception of health behaviors in their children and examined whether it differed for boys and girls. Means and standard deviations for parental ratings are presented in Table 1, as well as the results of one-way analyses of variance comparing these behaviors in boys and girls.

[Insert Table 1 about here]

According to parents’ ratings, insufficient physical activity and unhealthy eating habits are the most frequent health- risk behaviors among their children, while parents perceive risky sexual behavior and drug use as the least pronounced problems. This pattern is observed equally among boys and girls. However, significant gender differences are found in certain behaviors – parents rate insufficient physical activity and unhealthy eating habits as more pronounced among girls than among boys (*F*=11.67, *p*=.01 and *F*=3.72, *p*=.05, respectively).

Since various health-risk behaviors were explored, in order to examine whether these behaviors are structured in the expected way, a factor analyses of parents’ ratings was conducted. Two factors were retained with eigenvalues greater than one (Kaiser-Guttman criterion), and the retained factor structure after varimax rotation is presented in Table 2.

[Insert Table 2 about here]

When observed from the parents’ perspective, health-risk behaviors of their children can be grouped into two broader categories. The first one consists of addictive and risk behaviors (i.e. alcohol consumption, smoking, drug use and risky sexual behavior) and the second of behaviors reflecting unhealthy habits (i.e. unhealthy eating habits, insufficient physical activity and obesity). These two factors explain more than 50% of variance in the observed health behaviors.

Based on the results of the factor analysis, two composite measures of health behaviors were created, by summing the scale results on the corresponding health-risk behaviors. One-way analyses of variance were conducted to examine whether boys and girls differ on these two composite measures. Parents rate that boys and girls do not differ when it comes to their addictive and risk behaviors (*F*=0.04, *p*=.95), but that the behaviors reflecting unhealthy habits are significantly more pronounced among girls (*F*=7.99, *p*=.01).

Finally, we examined whether parental ratings of presence of certain health-risk behaviors in their children are determined by some important socio-demographic characteristics of parents, family and their surroundings. Regression analyses were conducted with composite measures of behaviors reflecting unhealthy habits and addictive and risk behaviors as criterions, and mother’s and father’s educational level, family living arrangements, family structure, self-rated living standard of the family and size of the municipality in which the family lives as predictors. The results of these regression analyses are shown in Table 3.

[Insert Table 3 about here]

Approximately the same amount of variance in both composite measures can be explained on the basis of the observed socio-demographic variables (Table 3). Self-rated living standard of the family was the only significant predictor of unhealthy habits (*β*=.60; p=.01) and addictive and risk behaviors (*β*=.52; p=.01).

# **Discussion**

From the parental perspective, the most prominent health-risk behaviors among adolescents are unhealthy eating habits and obesity, and parents rate addictive behaviors, such as drug use, as the least prevalent in their children. The ranking of prevalence of the examined behaviors is the same among girls and boys. However, the examination of gender differences has shown that parents consider girls as having more problems with unhealthy eating habits and obesity than boys. Currie et al. [30] have shown that girls have healthier eating habits when compared to boys, i.e. they consume fruit and vegetables more frequently, and eat fast food and drink soft drinks that contain sugar less frequently. Some other studies based on children’s and adolescents’ self-ratings have also shown that boys tend to be physically more active, but have worse eating habits when compared to girls [30, 31]. Our findings obtained from parental perspective point to the opposite, and indicate a possible discrepancy between parents’ and children’s perception of their eating habits. As for other types of health-risk behaviors, parents do not perceive any differences between boys and girls. Some studies have shown that boys begin to smoke cigarettes at a younger age than girls [32], which is confirmed in epidemiological studies conducted in Croatia as well [33, 34]. Hence, the results of the present study indicate that parents might not be aware of this and do not perceive these differences in behavior of boys and girls.

The existence of the expected two separate latent dimensions in parents’ ratings of their children health-risk behaviors was confirmed, indicating that parents are worried by two basic types of health behaviors in their children. The first dimension pertains to unhealthy habits and is responsible for behaviors such as unhealthy eating habits, insufficient physical activity and obesity. The second dimension relates to addictive and risk behaviors, and corresponds to behaviors such as alcohol consumption, drug use, smoking, and sexual risk behaviors. These findings obtained from parental perspective corroborate those from studies based on adolescent self-ratings concerning the basic dimensions of health behaviors. For example, Donovan, Jessor, & Costa [35] termed the consumption of alcohol and marihuana, delinquent behavior and sexual risk behavior as “adolescent problem behavior syndrome”. On the other hand, findings of some studies indicate that different health behaviors are not necessarily intercorrelated. Moreover, some authors have concluded that the correlations they have obtained are not as high as it may be expected and that the majority of health-risk behaviors are weakly intercorrelated or represent completely independent behaviors [36-38]. This is certainly an intriguing research issue which deserves further examination.

Our results show that it is possible to distinguish two basic concerns regarding adolescents’ health when observed from parental perspective. The first concern is regarding behaviors such as unhealthy eating habits and insufficient physical activity, which do not involve norm violations and do not evoke any sanctions, while the second one is regarding behaviors that to a certain degree involve norm violations and are sanctioned [39]. Although both represent obvious risks to one’s health, they are certainly prompted and mediated by different factors and play a different role in the behavior of adolescents. The parental perception of these two groups of health behaviors clearly differs – parents perceive the behaviors related to unhealthy habits as more prevalent.

The contribution of certain socio-demographic characteristics to parental perception of different health behaviors of their children varies: the results showed that the characteristic which has the greatest predictive strength is the self-rated living standard of the family. Since the indicators of SES used in the analyses are to an extent hierarchically structured, it is not surprising that the rating of family’s living standard, which is at the top of the hierarchy, has the greatest predictive strength. Besides, this is expected since numerous previous studies have shown that various health behaviors are primarily related to a person’s living standard [21]. A better living standard is generally associated with better quality of life, which entails better health habits. People with a better living standard have better health habits, are less prone to illness and live longer [21, 28]. The general rating of the living standard used in this study certainly to an extent encompasses education and living arrangements as well and, in Croatia, it is also indirectly related to the size of the municipality in which a family lives and to the family structure [40].

When considering the results of this study, one underlying factor which might have influenced the results should be taken into account. Namely, it is possible that parents’ ratings were affected by social desirability – that it that they gave socially desirable ratings of their children’s behavior and hence rated the socially undesirable problems as being less frequent. In that case it seems that, from parents’ point of view, it is socially desirable to have problems with poor eating habits but not with addictive behaviors. Future research comparing the parental ratings of their children’s behavior with adolescents’ self-reports is needed to empirically test this assumption, which was not done in this study.

In conclusion, the results of the present study provide a valuable insight into parental perception of their children’s health behavior in the adolescent years. An interesting finding is that parents do not perceive any marked differences between boys and girls in the presence of certain health-risk behaviors. When observed from parental perspective, these behaviors can be grouped into two distinct categories – unhealthy habits and addictive and risk behaviors. The examination of the contribution of socioeconomic factors to the explanation of parental perception of adolescent health behaviors resulted with an expected outcome – family’s living standard has the most important role in the context of adolescent health.

**References**

1. Bruhn JG. Life-style and health behavior. In: Gochman DS (ed.). *Health behavior: Emerging research perspectives.* New York: Plenum Press, 1988, 71-86).
2. Nicklas AT., Baranowski T, Baranowski JC, Cullen K, Rittenberry L, Olvera N. Family and child-care provider influences on preschool children’s fruit, juice, and vegetable consumption. *Nutr Rev*,2001;**59(7)**: 224-235.
3. Cullen WK, Baranowski T, Rittenberry L, Olvera N. Social-environmental influences on children's diets: Results from focus groups with African-, Euro- and Mexican-American children and their parents. *Health Educ Res,* 2000;**15(5)**: 581-590. doi: 10.1093/her/15.5.581
4. Wardle J. Parental influences on children's diets. *Proc Nutr Soc*, 1995; **54(3):** 747–758. doi: 10.1079/PNS19950074
5. Hill AJ, Weaver C, Blundell JE. Dieting concerns of 10 year olds girls and their mothers. *Br J Clin Psychol*, 1990; **29(3)**: 346-348. doi: 10.1111/j.2044-8260.1990.tb00894.x
6. Jeffery AN, Voss LD, Metcalf BS, Alba S, Wilkin, TJ. Parents' awareness of overweight in themselves and their children: Cross sectional study within a cohort (EarlyBird 21). *Br Med J*, 2004; **330(7481)**: 23–24. doi: 10.1136/bmj.38315.451539.F7
7. Wang Y, Beydoun M, Li J, Liu Y, Moreno LA. Do children and their parents eat a similar diet? Resemblance in child and parental dietary intake: systematic review and meta-analysis. *J Epidemiol Community Health*, 2011; **65(2)**: 177-189. doi:10.1136/jech.2009.095901
8. Sallis JF, Hovell MF, Hofstetter CR, Barrington E. Explanation of vigorous physical activity during two years using social learning variables. *Soc Sci Med*, 1992; **34(1)**: 25-32. doi: 10.1016/0277-9536(92)90063-V
9. Madsen K, McCulloch CE, Crawford PB. Parent modeling: Perceptions of parents' physical activity predict girls' activity through adolescence. *J Pediatr*, 2009; **154(2)**: 278-83. doi: 10.1016/j.jpeds.2008.07.044
10. Brown R, Scragg R, Quigley R. *Does the family environment contribute to food habits or behaviours and physical activity in children?* 2008, A report prepared for the Scientific Committee of Agencies for Nutrition Action.
11. Jackson C, Henriksen L, Dickinson D, Levine DW. The early use of alcohol and tobacco: Its’ relation to children's competence and parents' behavior. *Am J Public Health.* 1997; **87(3):** 359-364. doi: 10.2105/AJPH.87.3.359
12. Otten R, Engels R, van de Ven MO, Bricker JB. Parental smoking and adolescent smoking stages: The role of parents' current and former smoking, and family structure. *J Behav Med*, 2007; **30(2):** 143–154. doi: 10.1007/s10865-006-9090-3
13. Taylor JE, Conard M, O’Byrne KK, Haddock CK, Poston WSC. Saturation of tobacco smoking models and risk of alcohol and tobacco use among adolescents. *J Adolesc Health,* 2004; **35(3):**190-196*.* doi: 10.1016/j.jadohealth.2004.01.008
14. Eckstein KC, Mikhail LM, Ariza AJ, Thomson JS, Millard SC, Binns HJ. Parents' perceptions of their child's weight and health. *J Pediatrics*,2006; **117(3)**: 681-690. doi: 10.1542/peds.2005-091
15. Etelson D, Brand D, Patrick P, Shirali A. Childhood obesity: Do parents recognize this health risk? *Obes Res*, 2003; **11:** 1362-1368. doi: 10.1038/oby.2003.184
16. Myres S, Vargas Z. Parental perceptions of the preschool obese child. *J Pediatr Nurs,* 2000; **26(1):** 23-30.
17. SpearHJ, Kulbok PA.Adolescent health behaviorsandrelated factors*:* A review*.* Public Health Nurs*,* 2001; **18(2):**82*-*93. doi: 10.1046/j.1525-1446.2001.00082.x
18. Coe DP, Pivarnik JM, Womack CJ, Reeves MJ, Malina RM. Effect of physical education and activity levels on academic achievement in children*.* *Med Sci Sports Exerc,* 2006; **38(8)**: 1515-1519.
19. Giannakopoulos G, Panagiotakos D, Mihas C, Tountas Y. Adolescent smoking and health-related behaviours: Interrelations in a Greeks school-based sample. *Child Care Health Dev,* 2008; **35(2):** 164-170. doi: 10.1111/j.1365-2214.2008.00906.x
20. Gordon-Larsen P, McMurray RG, Popkin BM. Determinants of adolescent physical activity and inactivity patterns. *J Pediatr*, 2000; **105(6)**: 83-90. doi: 10.1542/peds.105.6.e83
21. Lee ECJ, Lemyre L, Turner MC, Orpana HM, Krewski D. Health risk perceptions as mediators of socioeconomic differentials in health behaviour. *J Health Psychol,* 2008; **13(8):** 1082-1091. doi: 10.1177/1359105308095962
22. Tassitano RM, Barros MVG, Tenorio MCM, Bezerra J, Florindo AA, Reis RS. Enrollment in physical education is associated with health-related behavior among high school students. *J Sch Health,* 2010; **80(3)**: 126-133. doi: 10.1111/j.1746-1561.2009.00476.x
23. Ajzen I, Timko C. Correspondence between health attitudes and behavior. *Basic Appl Soc Psych*, 1986; **7(4):** 259-276. doi: 10.1207/s15324834basp0704\_2
24. Adler NE, Marmot M, McEwen B, Stewart J. (eds.), *Socioeconomic status and health in industrialized nations: Social, psychological, and biological pathways*. New York: New York Academy of Sciences, 1999.
25. West P. Health inequalities in the early years: Is there equalization in youth? *Soc Sci Med*, 1997; **44(6):** 833–858. doi: 10.1016/S0277-9536(96)00188-8
26. Chen E, Matthews KA, Boyce WT. Socioeconomic differences in children’s health: How and why do these relationships change with age? *Psychol Bull,* 2002; **128(2):** 295-329.
27. Lynch JW, Kaplan GA, Salonene JT. Why do poor people behave poorly? Variation in adult health behaviors and psychosocial characteristics by stages of socioeconomic lifecourse. *Soc Sci Med,* 1997; **44(6):** 809-819
28. Wardle J, Steptoe A. Socioeconomic differences in attitudes and beliefs about healthy lifestyles. *J Epidemiol Community Health,* 2003; **57(6):** 440-443. doi:10.1136/jech.57.6.440
29. Gray VB, Byrd SH, Cossman JS, Chromiak J, Cheek WK, Jackson GB. Family characteristics have limited ability to predict weight status of young children. *J Am Diet Assoc*, 2007; **107(7):** 1204-1209. doi: 10.1016/j.jada.2007.04.004
30. Currie C, Roberts C, Morgan A, Smith R, Settertobulte W, Samdal O, Barnekow Rasmussen V. *Young people’s health in context. Health behavior in school-aged children (HBSC) study: International report from the 2001/2002 survey.* Denmark: World Health Organization, 2004.
31. Lattimore PJ, Halford JCG. Adolescence and the diet-dieting disparity: Healthy food choice or risky health behaviour? *Br J Health Psychol*, 2003; **8(4)**: 451–463. doi: 10.1348/135910703770238301. doi: 10.1348/13591070377023830
32. Harrell JS, Bangdiwala SI, Deng S, Webb JP, Bradley C. Smoking initiation in youth: the roles of gender, race, socioeconomics, and developmental status. *J Adolesc Health,* 1998; **23:** 271–79
33. Kuzman M, Pavić Šimetin I, Pejnović Franelić I. The Health Behaviour in School-aged Children Project (HBSC) 2005/2006 [*Ponašanje u vezi sa zdravljem u djece školske dobi 2005/2006. Rezultati HBSC istraživanja*]*.* Zagreb: Hrvatski zavod za javno zdravstvo, 2008.
34. Kuzman M, Pavić Šimetin I, Pejnović Franelić I. The Health Behaviour *in School-aged Children Project* (HBSC) 2010/2011 [*Ponašanje u vezi sa zdravljem u djece školske dobi 2010/2011. Rezultati HBSC istraživanja*]*.* Zagreb: Hrvatski zavod za javno zdravstvo, 2012.
35. Donovan JE, Jessor R, Costa FM. Structure of health-enhancing behavior in adolescence: A latent-variable approach. *J Health Soc Behav,* 1993; **34(12):** 346-362.
36. Krick JP, Sobal, J. Relationship between health protective behaviors. *J Community Health,* 1990; **15(1):** 19-34.
37. Mulder M, Ranchor AV, Sanderman R, Bouma J, Vand den Heuvel WJ. The stability of lifestyle behavior. *Int J Epidemiol,* 1998; **27(2):** 199-207.
38. Sobal J, Rauschenbach BS, Frongillo EA. Marital status, fatness and obesity. *Soc Sci Med*, 1992; **35(7):** 915–923. doi: 10.1016/0277-9536(92)90106-Z
39. Turbin MS, Jessor R, Costa FM. Adolescent cigarette smoking: Health-related behavior or normative transgression? *Prev Sci,* 2000; **1(3):** 115-124. doi:10.1023/A:1010094221568
40. Burušić J, Babarović T, Marković N. How far does the apple fall from the tree? The relationship between children's educational achievement and the educational level of their parents [Koliko daleko padaju jabuke od stabla? Odnos obrazovnih postignuća djece i obrazovne razine njihovih roditelja]. *Drust istraz*, 2010; **4-5:** 709-730.

**Appendices**

Table 1

*Parental ratings of prevalence of certain health-risk behaviors and results of one-way ANOVA testing gender differences in these behaviors*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Total sample | Girls | Boys |  |  |
| *Health-risk behaviors* | *N* | *M* | *Sd* | *N* | *M* | *Sd* | *N* | *M* | *Sd* | *F* | *p* |
| Insufficient physical activity | 578 | 1,7 | 0,69 | 373 | 1,76 | 0,67 | 203 | 1,56 | 0,7 | 11,67 | 0,01 |
| Unhealthy eating habits | 584 | 1,59 | 0,59 | 377 | 1,63 | 0,6 | 205 | 1,53 | 0,57 | 3,72 | 0,05 |
| Obesity | 585 | 1,19 | 0,44 | 376 | 1,2 | 0,44 | 207 | 1,18 | 0,44 | 0,12 | 0,73 |
| Alcohol consumption | 583 | 1,13 | 0,36 | 378 | 1,15 | 0,41 | 205 | 1,16 | 0,38 | 1,36 | 0,24 |
| Smoking | 590 | 1,13 | 0,39 | 376 | 1,12 | 0,35 | 210 | 1,1 | 0,34 | 1,48 | 0,22 |
| Risky sexual behavior | 577 | 1,06 | 0,27 | 373 | 1,05 | 0,24 | 202 | 1,08 | 0,31 | 1,99 | 0,16 |
| Drug use | 585 | 1,02 | 0,14 | 378 | 1,02 | 0,14 | 205 | 1,01 | 0,12 | 0,18 | 0,67 |

Table 2

*Factor structure of parental ratings of adolescent health-risk behaviors (PAC, varimax rotation)*

|  |  |  |
| --- | --- | --- |
| *Health-risk behaviors* | *Factor 1 (Addictive and risk behaviors)* | *Factor 2 (Unhealthy habits)* |
| Alcohol consumption | 0,74 |  |
| Smoking | 0,72 |  |
| Drug use | 0,71 |  |
| Risky sexual behavior | 0,58 |  |
| Insufficient physical activity |  | 0,78 |
| Unhealthy eating habits |  | 0,73 |
| Obesity  |  | 0,71 |
| *Eigen value* | 1,93 | 1,98 |
| *% of explained variance* | 27,57 | 23,92 |
| *Cumulative percentage of total variance*  | 51,42 |

Table 3

*The results of multiple regression analyses with parental ratings of their children’s unhealthy habits and addictive and risk behaviors as criterions and family’s socio-demographic characteristics as predictors*

|  |  |  |  |
| --- | --- | --- | --- |
|   | *Unhealthy habits*  |   | *Addictive and risk behaviors* |
|   | β | t | p |   | β | t | p |
| Mother’s level of education | 0,12 | 0,60 | 0,56 |   | 0,05 | 0,24 | 0,81 |
| Father’s level of education | 0,11 | 0,55 | 0,59 |   | 0,10 | 0,45 | 0,66 |
| Population size of the municipality in which the family lives | 0,03 | 0,15 | 0,88 |   | 0,17 | 0,87 | 0,39 |
| Living arrangements | -0,05 | -0,30 | 0,77 |   | 0,21 | 1,11 | 0,28 |
| Family structure | 0,00 | 0,00 | 1,00 |   | 0,14 | 0,69 | 0,50 |
| Living standard | 0,60 | 3,38 | 0,00 |   | 0,52 | 2,70 | 0,01 |
|  R | .60 |   | .52 |
| Adjusted R2 | .331 |  | .230 |
| F | 11.41 |  | 7.273 |
| p | .030 |  | .014 |