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Obesity of Preschool Children and Parents' Socioeconomic Status

Dragana Petrović[1], Dušan Nikolić[1], Igor Jelaska[2], Aleksandra Janković[1], Stevan Stamenković[3], Stefan Đorđević[3], Maša Antonijević[3], Borko Katanić[4], Goran Jelaska[5], Mima Stanković[3]

[1]Academy of Vocational Studies Southern Serbia, Department of the College of Teachers Bujanovac, Bujanovac, Serbia, [2]University of Split, Faculty of Kinesiology, Split, Croatia, [3]University of Niš, Faculty of Sport and Physical Education, Niš, Serbia, [4]Montenergin Sports Academy, Podgorica, Montenegro, [5]Virovitica County Hospital, Virovitica, Croatia

Abstract

Obesity in preschool children is on the rise. There is evidence that childhood obesity is higher among children with low-income parents and that the family plays a significant role in shaping children's eating behavior. The aim of this research was to determine whether overweight and obesity of preschool children depends on the social and economic status of their parents. The sample of participants consisted of preschool children and their parents. A total of 393 children participated, of which 205 boys (52.2%) and 188 girls (47.8%) aged 1 to 7 years. In order to determine weight status, the children's body weight and height were measured, on the basis of which the Body Mass Index (BMI) was calculated. The obtained BMI values were interpreted based on the recommendations given by the WHO. Therefore, children were classified into four different categories of weight: underweight, normal weight, overweight and obesity. The socioeconomic status of parents was assessed through a survey containing psycho-socioeconomic 16 items. The results show that there is no difference in socioeconomic parameters between parents who belong to different groups depending on the weight status of their children. Also, Chi-square test shows that there is no association between socioeconomic status with weight status of children. The only association exists between the residential and weight status of preschool children. These findings highlight the need for further research to explore the role of the environment and other potential socio-economic factors in the development of childhood obesity.

Keywords: *overweight, obesity, preschoolers, socio-economic status of parents, life satisfaction*

Introduction

Obesity among children of preschool age is on the rise, it is receiving increasing attention (Gebremedhin, 2015) and represents one of the most important health problems (Djermanović, Miletić, & Pavlović, 2015). This growth occurs in many countries of the world, including our country, and one of the reasons is insufficient physical activity of children (Jovanović, Nikolovski, Radulović, & Novak, 2010). Nikolić, Gadžić and Stamenković (2022) analyzed 46 studies and determined that the prevalence of overweight and obese preschool children is high on all continents. Since 1990, levels of physical activity have been declining in all age categories (Međedović et al., 2014). Hypokinesia with the intake of calories that cannot be consumed, lead to an increase in body weight above the optimum (Đurašković at al., 2012). Lim et al. (2009) found on a sample of 365 African-American preschool children that high consumption of sugar-sweetened beverages is associated with an increased risk of obesity, and Linardakis et al. (2008) reached the same results on a sample of 856 children from Crete, aged 4 to 7 years. Research shows that children gain the highest percentage of excess weight before the age of five and that this condition follows them throughout

Correspondence:

Stefan Djordjević
University of Niš, Faculty of Sport and Physical Education, Čarnojevića 10a, 18000 Niš, Serbia
E-mail: stefan-djordjevic1@hotmail.com

later childhood (Lanigan, Barber, & Singhal, 2010), as well as that children who are already obese at the age of two are likely to be obese as well when they grow up (Gebremedhin, 2015). The World Health Organization defines obesity as an abnormal accumulation of fat in the body that poses a great risk to health (Vucerakovic & Mitrovic, 2021). Childhood obesity can result in an increased risk of premature disease and death later in life (Gebremedhin, 2015). Even at the earliest age of children (2-3 years), obesity is associated with reduced fitness abilities, verbal, social abilities and daily activities (Cawley & Spiess, 2008; adapted from Pantelić, 2017). Research indicates that overweight and obese children have weaker motor development (Graf et al., 2004; adapted from Pantelić, 2017). Tai, Volkmer and Burton (2009), on a sample of 1509 children aged 4 to 5 years from Australia, determined that there is a relationship between asthma symptoms and obesity in boys and girls. Although obesity in preschool children can be explained by genetic factors, environmental influences play a key role (Lanigan, Barber, & Singhal, 2010). The early periods are characterized by great plasticity, and parents then have a high degree of control over the children's environment, especially related to their weight, but also various experiences. Parents serve as role models for children. The attitudes of parents' behavior are influenced by many factors: culture, economy, national cuisine, ethics, education, etc. There is evidence that obese adults create an "obese family environment" in which the risk for childhood obesity is high (Anzman, Rollins, & Birch, 2010). Childhood obesity is higher among children with low incomes and members of national minorities (Sekhobo at al., 2010). The family plays a significant role in shaping children's eating behavior (Pasztak-Opiłka at al., 2020; Schnettler at al., 2017). This information suggests the need to examine how the socioeconomic status of parents influences childhood obesity. There is a particular lack of data on how socioeconomic status affects the weight status of preschool children in Serbia. In this regard, the aim of this research was to determine whether overweight and obesity in preschool children depend on the psychological, social, and economic status of their parents. This research will contribute to a better understanding of the complex factors affecting childhood obesity and will enable the development of targeted strategies for prevention and intervention.

Methods

Participants

The sample of respondents in this research consisted of preschool children and their parents from the preschool institution "Naše dete" from Vranje. A total of 393 children participated, of which 205 were boys (52.2%) and 188 were girls (47.8%). The child's age ranged from 1 to 7 years, that is, from 18 to 84 months, and the average age was 4.31 years, that is, 57.37 months. Parental consent was obtained for each child who participated in the research. This study process adhered to the principles outlined in the Helsinki Declaration (World Medical Association, 2011), and was approved by the Ethics Committee of the Faculty of Sport and Physical Education (University of Nis).

Measurements

Anthropometric characteristics and weight status

In order to determine the level of weight, the children's body weight and height were measured, on the basis of which the Body Mass Index (BMI) was calculated. Body height was measured with an anthropometer (GPM, Zurich, Switzerland) in the respondent standing on a horizontal flat surface in an upright position with the back extended and the heels together. The lower side of the arm of the anthropometer was placed on the most prominent part of the crown of the head (vertex). The result of the measurement was read with an accuracy of 0.1 cm, and then they were converted into meters. Body mass was measured with a Tefal 6010 electronic scale (Rumilly, Haute-Savoie, France) in the respondent who, minimally dressed, was standing calmly on the landing shaft of the scale in an upright position. The measurement result was read from the scale screen with an accuracy of 0.1 kg.

BMI was calculated according to the standard formula, i.e. BMI=kg/m2. The obtained BMI values were interpreted based on the recommendations given by the WHO (World Health Organization). These recommendations take into account the gender and age of the child and convert the BMI values into percentiles on the basis of which the position of a certain index value is determined in relation to a group of children of the same gender and age (WHO, 2024). Therefore, children were classified into four different weight categories: underweight, normal weight, overweight and obesity (Table 1), as in the previous studies (Katanic et al., 2023; Nikolic et al., 2024).

Table 1. Categories of weight

Underweight	Less than 5th percentile	<5th percentile
Normal weight	from the 5th to less than the 85th percentile	5-85th percentile
Overweight	From the 85th to less than the 95th percentile	85-95 percentile
Obesity	Equal to or greater than the 95th percentile	≥95th percentile

Parents' socioeconomic status

In order to determine the possible association between children's obesity and the social-economic status of the parents, a survey was completed by the parents. The survey was anonymous and before it was distributed to the parents, data on the child's weight, height and calendar age at the time of measuring the anthropometric parameters, were entered into it.

The survey consisted of two parts. The first part of the survey related to the child's basic data (preschool, place, gender) and anthropometric measurements filled out by the researchers before the survey reached the parents (weight, height, date of birth, date of measurement). The second part of the survey related to data on the parents' social economic status: father's and mother's education (possible answers: elementary school, high school, college, master's degree, doctorate), life satisfaction, total number of devices in the house (computers, TV sets, laptops, tablets) and vehicles, monthly income per family member (average per household member), the child's participation in a sports club and the frequency of their training sessions (number of days in the week represented numerically), the father's and mother's involvement in sports recreation, and the frequency of their weekly activity (min. 30 minutes a day) (number of days in the week represent-

ed numerically), and frequency of parents' joint weekly activities with the child (number of days in the week represented numerically), rural or urban area of the child's life, living in an apartment or house, and possession of a mobile telephone by the child (Jørgensen, Sørensen, Ekholm, & Rasmussen, 2013; Kantomaa, Tammelin, Näyhä, & Taanila, 2007; Stalsberg & Pedersen, 2010). In order to determine whether the psycho-socioeconomic status of parents affects the degree of obesity of their children, the parents were classified into four groups: parents whose children are underweight (UW), parents whose children are normally weight (NW), parents whose children are overweight (OW) and parents whose children are obese (OB).

Life satisfaction

Life satisfaction was determined by the "Satisfaction With Life Scale" defined by Diener et al. (1985), which includes five statements with which respondents could agree or disagree using a seven-point scale ranging from completely agree (7) to completely disagree (1). The statements were as follows: My life is generally close to ideal; The conditions in my life are excellent; I am satisfied with my life; So far I have achieved the important things I want in life; If I could start over, I would change almost nothing. Respondents could score from a minimum of 5 to a maximum of 35 points, where a higher number of points meant greater life satisfaction.

Statistics

Data processing was performed with the SPSS 20 statistics program (SPSS Inc., Chicago, IL, USA). Descriptive statistics, based on frequency expressed in percentages, were used in this study. The Kruskal-Wallis test was used to determine the difference in psycho-social economic status between parents whose children belong to different groups depending on the level of weight of their children. Chi-square test of independence (χ^2) to determine the association between the children's weight and social factors. Based on the Cramer's V coefficient, the strength of the connections was estimated. According to Cohen's (1988) criteria from 0.01 to 0.29 is a small association (influence), from 0.3 to 0.49 is a medium association (influence) and for 0.50 is a large association (influence) (Pallant, 2011: 222). In all statistical analyses, significance was considered when $p<0.05$.

Results

The results of the research show that of the total number of children, 6.6% are underweight, 70.2% are normally weight, 11.5% are overweight, and 11.7% are obese. In order to get an even better understanding of weight problems, we found that 70.2% of preschool children are normally weight, and 29.8% of children have some problems with the level of weight (table 2).

Table 2. Weight status of preschool children

Weight level	Number of children	Percentage
Underweight	26	6.6 %
Normal weight	276	70.2 %
Overweight	45	11.5 %
Obesity	46	11.7 %
Children who are normally weight	276	70.2 %
Children who are not normally weight	117	29.8 %

The Kruskal-Wallis test (table 3) revealed no differences in any socioeconomic parameters among groups categorized by their children's weight status (UW, NW, OW, OB). Specifically, no differences were found in fathers' (χ^2=0.739, p=0.864) or mothers' (χ^2=1.437, p=0.697) education levels, life satisfaction (χ^2=4.377, p=0.224), total number of vehicles owned (χ^2=3.282, p=0.350), or household devices (χ^2=2.648, p=0.449). Similarly, no differences were observed in monthly income per family member (χ^2=2.153, p=0.541), children's frequency of attending sports clubs for training (χ^2=4.013, p=0.260), fathers' (χ^2=3.354, p=0.340) or mothers' (χ^2=0.331, p=0.954) weekly recreational physical activity, or joint parent-child activities (χ^2=4.149, p=0.246).

Table 3. Socioeconomic status of parents; The Kruskal-Wallis test.

Variables	Groups	N	Median	χ^2	p
Father's education	UW	26	2.00	0.739	.864
	NW	276	2.00		
	OW	45	2.00		
	OB	46	2.00		
Mother's education	UW	26	3.00	1.437	.697
	NW	276	3.00		
	OW	45	3.00		
	OB	46	3.00		
Satisfaction with life	UW	26	28.00	4.377	.224
	NW	276	27.00		
	OW	45	26.00		
	OB	46	26.50		

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Table 3. Socioeconomic status of parents; The Kruskal-Wallis test.

Variables	Groups	N	Median	χ^2	p
Total number of appliances	UW	26	6.00	2.648	.449
	NW	276	6.00		
	OW	45	6.00		
	OB	46	6.00		
Total number of vehicles	UW	26	1.00	3.282	.350
	NW	276	1.00		
	OW	45	1.00		
	OB	46	1.00		
Monthly income per family member	UW	26	4.50	2.153	.541
	NW	276	4.00		
	OW	45	4.00		
	OB	46	4.00		
Frequency of child's attendance at sports club	UW	26	0.00	4.013	.260
	NW	276	0.00		
	OW	45	0.00		
	OB	46	0.00		
How many times a week the father is active (min.30 minutes a day)	UW	26	1.00	3.354	.340
	NW	276	0.00		
	OW	45	0.00		
	OB	46	0.00		
How many times a week the mother is active (min.30 minutes a day)	UW	26	0.00	0.331	.954
	NW	276	0.00		
	OW	45	0.00		
	OB	46	0.00		
How many times a week the father and mother are active together with the child	UW	26	2.00	4.149	.246
	NW	276	3.00		
	OW	45	2.00		
	OB	46	2.00		

Legend: χ^2 - Chi-Square value; UW - parents whose children are underweight; NW - parents whose children are normally weight; OW - parents whose children are overweight; OB - parents whose children are obese.

Chi-square test of independence showed a association between the residential and weight status of preschool children (χ^2=11.552, p=0.09, Cramer's V=0.171). Based on the Cramer's V coefficient, we can see that there are the medium association between. In Table 4, we can see that the percentage of underweight children is higher in urban areas (7.2%) than in rural areas (3.4%), that the percentage of normally weight children is slightly higher in urban areas (71.3%) than in rural areas (63.8%). In rural areas, 24.1% of children are overweight and 8.6% are obese, which is higher compared to urban areas, where 9.3% are overweight and 12.2% are obese.

Analysis revealed no association between the type of residential unit and children's weight status (χ^2=1.512, p=0.680, Cramer's V=0.062). Similarly, no association was found between the possession of a child's mobile phone and their weight (χ^2=2.638, p=0.451, Cramer's V=0.082), children's involvement in sports and their nutrition (χ^2=4.622, p=0.202, Cramer's V=0.008), or the father's (χ^2=7.256, p=0.064, Cramer's V=0.136) and mother's (χ^2=7.366, p=0.061, Cramer's V=0.137) involvement in recreational sports activities and their children's weight.

Table 4. Association between socioeconomic status with weight status of children.

P	N (%)	Weight status WHO				Chi-Square		
		UW	NW	OW	OB	χ^2	p	Cramer's V
Rural	58 (14.8%)	2 (3.4%)	37 (63.8%)	14 (24.1%)	5 (8.6%)			
Urban	335 (85.2%)	24 (7.2%)	239 (71.3%)	31 (9.3%)	41 (12.2%)	11.552	.009*	0.171
Total	393 (100%)	26 (6.6%)	276 (70.2%)	45 (11.5%)	46 (11.7%)			

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Table 4. Association between socioeconomic status with weight status of children.

P	N (%)	Weight status WHO				Chi-Square		
		UW	NW	OW	OB	χ^2	p	Cramer's V
Building	58 (14.8%)	2 (3.4%)	42(72.4%)	8(13.8%)	6(10.3%)			
House	335 (85.2%)	24 (7.2%)	234(69.9%)	37(11.0%)	40(11.9%)	1.512	.680	0.062
Total	393 (100%)	26 (6.6%)	276 (70.2%)	45 (11.5%)	46 (11.7%)			
Phone	54 (13.7%)	5 (9.3%)	34 (63.0%)	9 (16.7%)	6 (11.1%)			
No phone	339 (86.3%)	21 (6.2%)	242 (71.4%)	36 (10.6%)	40 (11.8%)	2.638	.451	0.082
Total	393 (100%)	26 (6.6%)	276 (70.2%)	45 (11.5%)	46 (11.7%)			
Sports club	56 (14.2%)	2 (3.6%)	37 (66.1%)	6 (10.7%)	11 (19.6%)			
No club	337(85.8%)	24 (7.1%)	239 (70.9%)	39 (11.6%)	35 (10.4%)	4.622	.202	0.08
Total	393 (100%)	26 (6.6%)	276 (70.2%)	45 (11.5%)	46 (11.7%)			
Father trains	122 (31%)	8 (6.6%)	95 (77.9%)	12 (9.8%)	7 (5.7%)			
Doesn't trains	271 (69%)	18 (6.6%)	181 (66.8%)	33 (12.2%)	39 (14.4%)	7.256	.064	0.136
Total	393 (100%)	26 (6.6%)	276 (70.2%)	45 (11.5%)	46 (11.7%)			
Mother trains	92 (23.4%)	6 (6.5%)	74 (80.4%)	7 (7.6%)	5 (5.4%)			
Doesn't trains	301 (76.6%)	20 (6.6%)	202 (67.1%)	38 (12.6%)	41 (13.6%)	7.366	.061	0.137
Total	393 (100%)	26 (6.6%)	276 (70.2%)	45 (11.5%)	46 (11.7%)			

Legend: P - monitored parameters; N (%) - percentage and number of respondents; UW - underweight; NW - normal weight; OW - overweight; OB - obesity; χ^2 - test result; p - significance level; Cramer's V - size of influence.

Discussion

The research showed that there is no association between the weight status of preschool children and the socioeconomic factors that surround them. Also, the research showed that there is no difference in many social-economic factors between parents whose children belong to different groups depending on the level of weight. The only association exists between the place of residence and the weight status of preschool children. Research shows that the percentage of underweight children is higher in urban areas (7.2%) than in rural areas (3.4%), and the percentage of normally weight children is slightly higher in urban areas (71.3%) than in rural areas (63.8%). In rural areas, 24.1% of children are overweight and 8.6% are obese, which is higher compared to urban areas, where 9.3% are overweight and 12.2% are obese. Also, similar results to ours were obtained by (Contreras et al., 2021; Vuceraković & Mitrović, 2021), i.e. they determined that children from rural areas have a higher BMI. The authors conclude that rural environments have characteristics that may increase the risk of childhood overweight and obesity such as: high levels of poverty, limited access to nutrition education, preventive care and grocery stores. Contrary to our results Özdirenç at al. (2005) found that children from urban areas in Turkey are more obese and inactive than children from rural areas. Sharma et al. (2019) reached the same results on a sample of 1000 preschool children aged 3 to 6 years from India and found that the overall prevalence of overweight and obesity was higher in urban (25.6%) than in rural (14.5%) areas. These data correspond to a study on preschool children also conducted in Serbia, where an association between residential status and weight status was also found (Aleksić Veljković, Peulić, Katanić, & Jovanović, 2023). While Manios et al. (2007) found on a sample of 2374 children from Greece, aged 1 to 5 years, that there is no connection between the region of residence and overweight of preschool children. It should be noted that the prevalence of obesity can vary depending on the region within the same country (Katanic et al., 2023), which may explain such contrasting results between urban and rural children in different countries.

Our research shows that the level of education of mothers and fathers does not affect the prevalence of obesity in their children. Manios at al. (2007) reached the same results. In a sample of 2374 children from Greece, aged 1 to 5 years, they determined that the level of education of the mother and father was not associated with overweight and obesity in their children. Unlike our results, Whitaker and Orzol (2006), based on a sample of 2452 respondents, determined that there is an inverse relationship between mothers' education and the prevalence of obesity in children. Children's obesity was higher among parents who had a lower level of education. Fatemeh at al. (2012) found on a sample of 500 children aged 2 to 5 from Iran that there is no relationship between the education of mothers and the weight level of their children, but that there is a relationship between the education of fathers and the weight level of their children. Children of fathers with a lower level of education were more obese compared to children of parents with a higher level of education. Maalouf-Manasseh, Metallinos-Katsaras and Dewey (2011) found that obesity among preschool children aged 2 to 5 years in Massachusetts was higher among children of less educated mothers. Completely different and very interesting data were obtained by Hassanzadeh-Rostami, Kavosi and Nasihatkon (2016) on a sample of 8911 children aged 2 to 6 years from Iran. They determined that there is a connection between mothers' education and their children's overweight/obesity, but that more educated mothers have more obese children. The authors hypothesize that higher education and income initially result in unhealthy diet and lead to obesity, but that over the years, education can influence the expan-

sion of knowledge and become a protective factor that will affect the reduction of obesity. Also, mothers who work outside the home have less time to take care of their children's weight status and physical activity. When it comes to parental education and its connection to obesity, quite contradictory findings have been observed, suggesting that this topic should be examined in more detail.

Findings in our study show that there is no difference in monthly income per family member between families belonging to different groups depending on the level of weight of their children. This shows us that the financial situation in the family does not affect the prevalence of obesity in children. Whitaker and Orzol (2006) reached the same results. The authors, based on a sample of 2452 respondents, consisting of three-year-old children and their mothers from American cities, determined that there is no relationship between household income and obesity in children. This was confirmed by Senbanjo and Adejuyigbe (2007) and in a sample of 270 Nigerian children of preschool age, they did not find a relationship between obesity and socioeconomic class.

Different results were obtained by Sakamoto et al. (2001) and on a sample of 1157 preschool children from Thailand found that there is a relationship between childhood obesity and household income. Children living in families with lower monthly household income were more obese. Anzman, Rollins and Birch (2010) state that traditional feeding practices and the perception that a "chubby baby is a healthy baby" still exist, especially among those with low incomes. Thibault et al (2013) also found a link between overweight/obesity and low parental socioeconomic standard on a sample of 4048 children aged 5 to 7 years from France. Wake, Hardy, Canterford, Sawyer and Carlin (2007) found on a sample of 4983 children aged 4 to 5 years from Australia that socially disadvantaged children have a 47% higher chance of being in the category with a high body mass index than others. On the other hand, interesting and completely different results were obtained by Saldiva et al. (2004) on a sample of 987 children under 5 years of age from Brazil. The authors confirmed that there is a connection between income and weight level, but that the prevalence of obesity increases with the increase in per capita income, which is different from the previously mentioned research. Contrary to that, there is a inverse relationship between income per capita and underweight, that is, the lower the income, the greater the underweight of children.

One of the indicators of a family's economic standard is the number of vehicles it owns. Our research showed that there is no difference in the number of vehicles between parents who belong to different groups, depending on the level of weight of their children. This is another confirmation that the economic standard does not affect the obesity of children in preschool institutions in Vranje. The influence of socioeconomic factors on obesity in preschool children was investigated by Armstrong et al. (2003) on a sample of 74,500 children aged 39 to 42 months from Scotland and reached different results compared to our research. Our research also showed that there is no connection between the type of residential building in which the child lives (residential building or house with a yard) and the level of children's weight. From this, it could be assumed that children who have a house with a yard are not more physically active than children who live in apartments. It is an interesting research question for further research.

Our research found that 13.7% of children have their own mobile phone, but no connection was found between phone ownership and weight status. Gralczyk (2019) notes that many children use their parents' smartphones or tablets, with 80% of guardians allowing children under six to use these devices. Specifically, 49% of 1-2-year-olds, 62% of 3-4-year-olds, and 84% of 5-6-year-olds use tablets and mobile phones, with ownership rates of 13%, 25%, and 39%, respectively. A limitation of our study is that we did not assess whether children use their parents' phones or how daily usage might relate to weight. In contrast, Genc (2014) found that none of the children in his study owned a phone, but 70.3% of parents had installed child-friendly apps on their phones. Additionally, our research showed no significant difference in the total number of household devices between parents of children in different weight groups. Future research should examine the time children spend with these devices, as our findings suggest the number of devices is not related to obesity.

Our findings shows that a small number of preschool children are members of a sports club, only 14.2%, this is similar to the results of Jovanović et al. (2010) on a sample of 193 children from Pančevo, aged 4 and 5 years. In that survey, parents stated that it was due to lack of finances, lack of sports facilities and fields. However, our research has shown that there is no relationship between children's involvement in a sports club and the level of weight, as well as that there is no difference in the frequency of a child's attendance at a sports school or club between children who belong to different groups depending on the level of weight.

Also our results showed that there is no connection between the recreational physical activity of parents and the weight level of their children. These results are interesting because Toselli et al. (2015) on a sample of 2640 preschool children and their parents from Italy determined that there is a positive association between parents' BMI and children's BMI. The same results were obtained by Ji et al. (2018) on a sample of 112 children aged 3 to 6 years from China. The authors determined that there is a positive association between obesity in mothers and obesity in children. More specifically, overweight children often have overweight mothers. Maalouf-Manasseh, Metallinos-Katsaras and Dewey (2011) found that obesity in preschool children aged 2 to 5 years in Massachusetts was higher in children born to obese mothers.

Pasztak-Opiłka at al. (2020) found on a sample of 52 mothers and their children (children aged 11 to 18 years) that the lower the level of satisfaction with life, the greater the tendency to regulate the affective state and family relationships through nutrition, and the improper organization of nutrition is also manifested. Greater life satisfaction is associated with greater knowledge about nutrition and dietary control. Schnettler et al. (2017) on a sample of 300 families (triad - mothers, fathers and children older than 10 years) from Chile determined that there is a positive relationship between life satisfaction and the quality of nutrition. Although the mentioned studies did not include preschool children, the research helped us to ask the research question. The results showed that in our sample of respondents there is no connection between the life satisfaction of the parents who filled out the survey and the obesity of their children.

One of the main limitations of this study is related to the questionnaire, which, although created based on existing valid questionnaires, should have undergone a validation

process on the given sample. Another limitation is that the sample was taken from a single location, so future research should consider including multiple locations within a region to ensure a more representative sample. Additionally, future studies should use parametric statistics to make the conclusions more robust.

Nevertheless, this study has made a significant contribution to the existing literature by attempting to explain the impact of complex socioeconomic factors on the weight status of preschool children. While similar studies exist in other countries, data on the socioeconomic weight status of preschool children in Serbia were lacking. This study fills that gap, and these data can now be used and compared with findings from other countries.

Conclusion

The results of our research indicate that overweight and obesity in preschool children are complex issues, making it difficult to predict and determine which psycho-socio-economic factors influence their occurrence. The main findings show no differences in any socio-economic parameter based on children's weight status. Additionally, the Chi-square test confirmed no association between socio-economic parameters and children's weight status. The only significant association was found between the area of residence (urban or rural) and the weight status of preschool children. These findings highlight the need for further research to explore the role of the environment and other potential socio-economic factors in the development of childhood obesity.

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Conflict of interest
The authors declare that there is no conflict of interest.

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