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Nutritional and physical fitness differences in children and adolescents from diverse socio-economic backgrounds

Diferencias nutricionales y de condición física en niños y adolescentes de contextos socioeconómicos diferenciados

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Abstract: Lifestyle affects the health of children and adolescents, especially those living with socio-economic disadvantages. The purpose of this study was to evaluate nutritional status, level of fitness, and diet in children and adolescents from different socio-economic environments. To evaluate nutritional status and nutritional habits, Body Mass Index Z-score, Waist-to-Height Index and the Mediterranean Diet Quality Index, were chosen. To measure physical fitness, Eurofit battery was used. Participants were 290 healthy children and adolescents of two groups. Group 1 (78) was part of a social integration project through sport; group 2 (212) belonged to a private school with a high socio-economic status. Differences between groups were found in the nutritional status and physical fitness tests. There were no differences in the total score of the Kid Med Test ($p=.42$), but data suggested a better quality of food consumption in group 2. Even though both groups exhibited healthy values, results were slightly more favorable for speed of movement and flexibility ($p<.05$), and for diet habits (better intake of olive oil, less sweet consumption, $p < .05$) in the group 2. The study, even with limitations, shows that there is still room for equal opportunities in promoting the quality of life of young people.
Keywords: Physical activity; lifestyle; nutritional status; diet; children; social differences.

Resumen: El estilo de vida afecta a la salud de los niños y adolescentes, especialmente a los que viven en riesgo de exclusión social y económica. El propósito de este estudio fue evaluar el estatus nutricional, el nivel de condición física y la dieta en niños y adolescentes de diferentes entornos socioeconómicos. Para evaluar el estatus nutricional y los hábitos nutricionales, se eligió el índice de masa corporal z-score, el índice cintura-estatura y el índice de calidad de la dieta mediterránea. Para medir la aptitud física, se utilizó la batería Eurofit. Los participantes fueron 290 niños y adolescentes sanos de dos grupos. El grupo 1 (78) formaba parte de un proyecto de integración social a través del deporte; el grupo 2 (212) pertenecía a un colegio privado de alto nivel socioeconómico. Se encontraron diferencias entre los grupos en las pruebas de estatus nutricional y de aptitud física. No hubo diferencias en la puntuación total del Kid Med Test ($p=.42$), pero los datos sugirieron una mejor calidad del consumo de alimentos en el grupo 2. Aunque ambos grupos presentaban valores saludables, el grupo 2 obtuvo mejores resultados en la velocidad de movimiento y la flexibilidad ($p<.05$), y en los hábitos dietéticos (mejor consumo de aceite de oliva, menos consumo de dulces, $p <.05$). El estudio, aun con limitaciones, muestra que todavía hay espacio para la igualdad de oportunidades en la promoción de la calidad de vida de los jóvenes.
Palabras clave: Actividad física; estilo de vida; estatus nutricional; dieta; niños; diferencias sociales.

Introduction

Childhood and adolescence are periods of life where rapid physical growth and brain development occur. The autonomy increases and decisions about health-related behaviors may influence current and future health. Behaviors in this moment of life could continue into adulthood affecting physical and mental health (Inchley, et al., 2017). Healthy eating habits are very important during adolescence and have an especially positive effect on future health (Hyun-Suk, et al., 2012). Lifestyle is one the most important factors that determine health (de Lorgeril, & Salen, 2014), and physical activity and proper diet are the main components for a healthy lifestyle.

Recent studies show that following healthy diet and being physically active decreases the likelihood of suffering from type 2 diabetes and cardiovascular diseases (Lv, 2017). On the other hand, physical inactivity and unhealthy diet are associated with the increase of chronic non-communicable diseases (Ferreira-Pêgo et al., 2017). There is a significant number of studies that provide evidence that low levels of physical activity in young people are linked to increased rates of obesity, cardiovascular disease, and poor mental health (Riddoch,

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1998),a positive correlation has been found between physical activity and greater adherence to Mediterranean diet (López-Nuevo, et al., 2021). In addition, relationships between physical activity and wellbeing, depression, and anxiety can also be found in studies (Bailey, 2006; McMahon, et al., 2017).

Sport participation and physical activity are globally recognized as fundamental factors in enhancing psychological-physical wellbeing, both in young people and adults (Lv, 2017; Ferreira-Pêgo, et al., 2017; Warburton, et al., 2006). Physical activity time is replaced with sedentary time in the way to adulthood (Ortiz-Sanchez, et al., 2020). At least 60 minutes a day of moderate or intense physical activity prevents illnesses and improves health in children and adolescents, it is specifically associated with improvement in cardiometabolic biomarkers (Warburton, et al, 2006; Poitras, et al., 2016). Physical fitness during childhood and adolescence is an important indicator of current and future health (McMahon, et al., 2017).

Unfortunately, the data are no positive. Most adolescents are failing to meet current nutritional recommendations and just 19% of them achieve the 60 minutes of moderate-to-vigorous physical activity (MVPA) daily. Breakfast consumption on school days has declined, 48% eat neither fruit nor vegetables daily and 16% consume soft drinks every day and MVPA decline with age and boys are more likely than girls to be physically active (Colley, et al., 2019).

In addition, it seems that the environment in which we develop also influences our health behaviors. Evidence gathered over the last few decades shows that disadvantaged socio-economic circumstances are associated with increased health risks and suggests that physical activity may play a key role (Currie, 2016; Franzini, et al, 2009). For example, living in poor neighborhoods increases the probability of having worse healthy habits (Greves, et al., 2010), in part because groups with low socio-economic status tend to adopt unhealthy diets (Kastorini, Lykou, et al., 2016). Studies show a strong socio-economic gradient in eating behaviors and television time (Cameron, et al., 2012). As a result, health inequalities are now embedded in contemporary international policy development. The World Health Organization (WHO) Commission on Social Determinants of Health claims that most inequalities in health within and between countries are avoidable, yet they continue to affect young people across Europe and North America.

Family socioeconomic status appears to affect levels of participation and general health. Adolescents with a medium and high score on family affluence scale (FAS) in most countries are more involved in vigorous physical activity than lower FAS groups and likely to be susceptible to the negative health outcomes associated with low levels of physical activity. Moreover, the lack of vigorous physical activity may also contribute to the rise in child obesity and general lower health (Sigmundová, et al., 2019). Children who are overweight have a higher chance of becoming obese adults. In 2013, roughly one third of Spanish children were overweight, a slightly higher share for boys when compared with girls (WHO, 2013). Data for Spain from 2013/2014 show that only 24.4% of adolescents reach the recommended physical activity levels for health (according to the WHO recommendations), with significantly more boys being active than girls, 31.7% and 17.3%, respectively (WHO, 2016).

The above information data reveal the necessity for developing educational programs and improving lifestyle concepts to prevent and promote healthy ways of life in children before they become future adults. Regarding this issue, the WHO has promoted different campaigns about physical activity and healthy lifestyles in children. These efforts, however, must consider the limited practical and material resources that young people identify as barriers to physical activity (Rees, et al., 2006).

This suggests that further data and investigation are needed to develop new educational and social programs about physical activity for all children, especially in those who live at socio-economic disadvantage. Organized sport could be an effective strategy to increase the time in MVPA (Marques, et al., 2016).

Because of this situation, the purpose of present study was to evaluate the nutritional status, fitness level and diet in children and adolescents from different sex and socio-economic environment proving how social programs based on sports participation could attenuate eventual inequalities.

Materials and Methods

Participants

This study was designed as a comparative data analysis of 290 children and adolescents (7 – 14 years old), 156 males and 134 females. Participants were recruited from two different socio-economic areas in Spain. The participants of Group 1 (47 males and 31 females) belonged to a non-government organization (NGO)

sport initiative for children and adolescents at socio-economic risk because of their social and family situation. The NGO selected the children and adolescents who were to be part of the inclusion program. This condition was based on family (e.g., single-parent and poor labor condition), economy (e.g., low incomes) and social factors (e.g., immigrant parents). They were living in Guadalajara province and Tetuán, and Latina districts of Madrid city. The participants of Group 2 (109 male and 103 females) were children and adolescents enrolled in a high socio-economic standard private school in Boadilla del Monte (a village in Madrid region). The inclusion criteria for both groups were a medium (between 2.33 and 3.66) or high (more than 3.66) physical activity evaluation according to national and international reference by the Physical Activity Questionnaire for Older Children (PAQ-C) (Benítez-Porres, et al., 2016; Kowalski, et al., 2004). In order to accomplish this questionnaire, children under 10 years of age were helped by assistants. Data collection for both groups were performed in the Physiology Laboratory of the Universidad Europea de Madrid.

Instruments

The ISAK standard was used to measure weight, height and waist circumference (Stewart, et al., 2011). For weight, we utilized a SECA 700 mechanical scale and for height a SECA 216 measuring rod. For waist measurement, a Lufkin tape measure model W606PM was used.

To collect data about nutritional status these two indices were selected:

· Body Mass Index (BMI) Z-score: height and weight were measured and used to calculate the BMI according to the World Health Organization Z-score cohort value (5 – 19 years). Its main feature is to create a standard assessment regardless of gender, age and ethnicity. The indicators are: Obesity (e» +2SD); Overweight (>+1 SD to 1.9 SD); Normal weight (-2 and +1 SD); Underweight (d» 2 SD) and Severe underweight (d» -3 SD). The value reference is on the web: http//who.it/growthref/tolos/en.

· Waist-to-Height Ratio (WHtR) is a specific index based on waist circumference and height, and correlates well with intra-abdominal visceral adiposity (Martone, et al, 2014). Waist circumferences were measured at the equidistant point between the last not floating rib and the iliac crest. Height was measured in centimeters. Pediatric reference value is: d» .47 normal fat distribution; between 0.47 and 0.50 moderate fat distribution; > .50 exceed fat distribution (Marrodán, et al., 2013).

To collect data about nutritional habits this questionnaire was used:

· The Mediterranean Diet Quality Index questionnaire (Kid MedTest) in children and adolescents. It is based on 16 questions, with either positive or negative answers. Healthy habits were calculated based on 12 questions with a positive score (+1); the other 4 are representative of unhealthy habits and negatively scored (-1). Standard values are divided in: < 3 low quality; entre 4 y 7 between 4 and 7 medium qualities; > 8 optimal qualities (Serra-Majem, et al., 2004).

To measure components of physical fitness (related to sports performance) certain tests from the «Eurofit Battery» (Adam, 1988), were selected:

· Standing broad jump test to measure explosive strength

· Shuttle run test to evaluate the speed of movement

· Sit and reach test to assess flexibility.

Procedure

The design of the study was conducted under the principles established in the Declaration of Helsinki, and information management was conducted according to the provisions laid forth in Spanish law (Law 15/1999 of 13 December on the Protection of Personal Data). The study was approved by The Clinical Research Ethics Committee of the Niño Jesús University Hospital (R0031/14). The approval of the director and school committee of each school was obtained and all parents or guardians of the participants in the study signed informed consent forms.

Once the feasibility of the study was approved, a pilot study was carried out to calculate the times and instruments and to detect possible contingencies.

Afterwards, the groups were scheduled to rotate through the different rooms: physical fitness tests were performed in sports facilities, nutritional status was assessed in an exercise physiology laboratory, and the questionnaire to measure nutritional habits were administered in classrooms.

Data Analysis

To explore the data, the SSPS.23 statistical package was used. Means and standard deviations were calculated. Data were tested for normal distribution with the Kolmogorov-Smirnov Test. Homoscedasticity was tested with the Levene test. A factorial ANOVA test was used

to compare groups, genders and the interaction between groups and gender on each parameter. Significance levels were established with $p < .05$. To control type I error, Bonferroni correction was applied when more than one hypothesis was tested. Since alpha was set at 0.05, this value was divided by the number of hypotheses tested (e.g., with two hypotheses tested, significance levels were set with $p < .025$). Effect size was measured by partial eta-squared (η^2). Categorical data were analyzed with Pearson's Chi-Square test.

Results

Nutritional status measurements, physical fitness level related to sport performance (speed of movement, standing broad jump and flexibility) and diet pattern results for group 1 and group 2 are shown in Table 1. The variables related to nutritional status measures were statistically significant between the socio-economically disadvantaged group (group 1) and the one with an advantageous socioeconomic situation (group 2) reaching higher values than those of group 1. With respect to tests of physical condition, group 1 obtained better values compared to the group 2 in flexibility, but instead the percentile in the test of speed of movement was higher in group 2. There were no differences in the standing broad jump test and nutrition values from Kidmed.

Table 1.
Nutritional status, physical fitness and diet quality.

Variables	Units	Group 1		Group 2		F	η2	p
		M	SD	M	SD			
BMI	z-score	0.46	0.92	0.05	1.03	9.62	0.03	.00
WHtR	-	0.44	0.05	0.43	0.05	8.07	0.03	.01
Speed of movement[2]	Percentile	49.37	42.13	77.04	21.41	55.64	0.17	.00
Standing broad jump	Percentile	53.46	30.54	60.53	29.40	3.13	0.01	.07
Flexibility	Percentile	42.10	31.02	32.86	34.38	1.75	0.02	.00
Kidmed	Range 0-12	7.35	2.75	7.00	2.05	1.44	0.00	.42
PAQ-C	Range 1-5	2.69	0.60	2.82	0.76	1.36	0.01	.32

BMI: Body Mass Index. WHtR: Waist-to-Height-Ratio. Kidmed: Mediterranean Diet Quality Index Questionnaire. PAQ-C: Physical Activity Questionnaire for Children. Group 1: children and adolescents in low socioeconomic status. Group 2: children and adolescents in high socioeconomic status. M: Mean. SD: Standard Deviation. F: Fisher-Snedecor test. η2: Partial eta squared. [2]Longer time meaning worse performance. Significance levels were established with p < .05.

Variables related to nutritional status, physical fitness, diet, and general level of activity as assessed through the PAQ-C, are compared by gender for group 2, in Table 2. Girls had a higher performance than boys in speed and flexibility. Despite this fact, boys had greater waist-to-height ratio and general level of physical activity than girls. No differences were found between genders in BMI, diet, and the standing broad jump. Results from group 1 were compared in Table 3 and no significant differences were found by gender in group 1.

In Table 4, data from all the boys who participated in the study are shown by group. The variables analyzed were nutritional status, physical fitness, diet and general level of activity through the PAQ-C. Group 1 had greater results than group 2 in flexibility. However, group 2 had a higher performance than group 1 in speed. No differences were found between groups in BMI, waist-to-height ratio, standing broad jump, general level of activity and diet.

On the other hand, group 2 shown greater results than group 1 in BMI, waist to-height ratio, speed and standing broad jump.

Table 2.
Nutritional status, physical fitness and diet quality by sex (group 2).

Variables	Units	Boys		Girls		F	η2	p
		M	SD	M	SD			
BMI	z-score	0.165	1.06	-0.06	0.98	1.64	0.00	.13
WHtR	-	0.44	0.05	0.42	0.04	8.01	0.03	.00
Speed of movement[2]	Percentile	73.80	22.70	80.45	19.50	4.55	0.02	.01
Standing broad jump	Percentile	56.95	29.78	64.03	28.74	1.05	0.00	.07
Flexibility	Percentile	25.06	30.25	41.14	36.64	1.75	0.01	.00
Kidmed	Range 0-12	7.08	2.09	6.91	2.02	.32	0.00	.48
PAQ-C	Range 1-5	3.02	0.76	2.62	0.72	.44	0.00	.00

BMI: Body Mass Index. WHtR: Waist-to-Height-Ratio. Kidmed: Mediterranean Diet Quality Index Questionnaire. PAQ-C: Physical Activity Questionnaire for Children. M: Mean. SD: Standard Deviation. F: Fisher-Snedecor test. η2: Partial eta squared. [2]Longer time meaning worse performance. Significance levels were established with p < .05.

Table 3.
Nutritional status, physical fitness and diet quality by sex (group 1).

Variables	Units	Boys		Girls		F	η2	p
		M	SD	M	SD			
BMI	z-score	0.40	1.02	0.54	0.77	1.64	0.00	.55
WHtR	-	0.44	0.06	0.45	0.05	8.01	0.03	.29
Speed of movement[2]	Percentile	53.15	41.27	43.24	43.52	4.55	0.02	.56
Standing broad jump	Percentile	53.94	32.00	52.70	28.64	1.05	0.00	.75
Flexibilit	Percentile	40.38	29.74	44.71	33.20	1.75	0.01	.54
Kidmed	Range 0-12	7.28	2.69	7.45	2.86	.32	0.00	.79
PAQ-C	Range 1-5	2.84	0.59	2.49	0.59	.44	0.00	.09

BMI: Body Mass Index. WHtR: Waist-to-Height-Ratio. Kidmed: Mediterranean Diet Quality Index Questionnaire. PAQ-C: Physical Activity Questionnaire for Children. M: Mean. SD: Standard Deviation. F: Fisher-Snedecor test. η2: Partial eta squared. [2]Longer time meaning worse performance. Significance levels were established with p < .05

Table 4.
Nutritional status, physical fitness and diet quality in males.

Variables	Units	Group 1		Group 2		F	η2	p
		M	SD	M	SD			
BMI	z-score	0.40	1.02	0.16	1.06	1.64	.00	.19
WHtR	-	0.44	0.06	0.44	0.05	8.01	.03	.37
Speed of movement[2]	Percentile	53.15	41.27	73.80	22.70	4.55	.02	.03
Standing broad jump	Percentile	53.94	32.00	56.95	29.78	1.05	.00	.64
Flexibility	Percentile	40.38	29.74	25.06	30.25	1.75	.01	.00
Kidmed	Range 0-12	7.28	2.69	7.08	2.09	.32	.00	.97
PAQ-C	Range 1-5	2.84	0.59	3.02	0.76	.44	.00	.31

BMI: Body Mass Index. WHtR: Waist-to-Height-Ratio. Kidmed: Mediterranean Diet Quality Index Questionnaire. PAQ-C: Physical Activity Questionnaire for Children. Group 1: children and adolescents in low socioeconomic status. Group 2: children and adolescents in high socioeconomic status. M: Mean. SD: Standard Deviation. F: Fisher-Snedecor test. η2: Partial eta squared. [2]Longer time meaning worse performance. Significance levels were established with p < .05.

In Table 5, the results of all the girls that participated in the study are shown by groups. The variables that were analyzed are: nutritional status (BMI and waist-to-height ratio), physical fitness (speed of movement,

Table 5.
Nutritional status, physical fitness, and physical activity and diet quality in females.

Variables	Units	Group 1		Group 2		F	η2	p
		M	SD	M	SD			
BMI	z-score	0.54	0.77	-0.06	0.98	1.64	.00	.00
WHtR	-	0.45	0.05	0.42	0.04	8.01	.03	.00
Speed of movement[2]	Percentile	43.24	43.52	80.45	19.50	4.55	.02	.00
Standing broad jump	Percentile	52.70	28.64	64.03	28.74	1.05	.00	.04
Flexibility	Percentile	44.71	33.20	41.14	36.64	1.75	.01	.48
Kidmed	Range 0-12	7.45	2.89	6.91	2.02	.32	.00	.27
PAQ-C	Range 1-5	2.49	0.59	2.62	0.72	.44	.00	.52

BMI: Body Mass Index. WHtR: Waist-to-Height-Ratio. Kidmed: Mediterranean Diet Quality Index Questionnaire. PAQ-C: Physical Activity Questionnaire for Children. Group 1: children and adolescents in low socioeconomic status. Group 2: children and adolescents in high socioeconomic status. M: Mean. SD: Standard Deviation. F: Fisher-Snedecor test. η2: Partial eta squared. [2]Longer time meaning worse performance. Significance levels were established with p < .05.

standing broad jump and flexibility), diet (Kidmed) and general level of activity through the PAQ-C. Group 2 shown better results than group 1 in BMI, waist to-height ratio, speed and standing broad jump.

Regarding to the final score in the Kidmed test, no differences were found between groups. But some differences between groups were found specifically in the consumption of fish, pulses, olive oil and dairy products at breakfast, being higher in group 2 (Table 6). However, fast food, rice and pasta, pastries and sweets were consumed in greater amounts in group 1. Group 2 skipped breakfast more often than group 1. Fruit, vegetables, nuts, cereals or grains at breakfast, yoghurt or cheese consumption were similar in both groups.

Table 6.
Answers to the items of kidmed questionnaire.,

Variables	Group 1		Group 2		Results	p
	No	Yes	No	Yes		
Takes a fruit or fruit juice every day	21	57	38	174	G2 = G1	.091
Has a second fruit every day	48	30	113	99	G2 = G1	.211
Has fresh or cooked vegetables regularly once a day	30	48	79	133	G2 = G1	.852
Has fresh or cooked vegetables more than once a day	57	21	172	40	G2 = G1	.136
Consumes fish regularly (at least 2–3/week)	23	40	35	177	G2> G1	.001
Goes >1/ week to a fast-food restaurant (hamburger)	41	36	179	33	G1 > G2	.000
Likes pulses and eats them >1/week	36	42	61	151	G2 > G1	.005
Consumes pasta or rice almost every day (5 or more per week)	18	60	139	73	G1 > G2	.000
Has cereals or grains (bread, etc) for breakfast	19	59	44	167	G2 = G1	.522
Consumes nuts regularly (at least 2–3/week)	42	36	130	81	G2 = G1	.233
Uses olive oil at home	16	62	6	206	G2 > G1	.000
Skips breakfast	58	20	24	188	G2 > G1	.000
Has a dairy product for breakfast (yoghurt, milk, etc)	15	63	19	193	G2 > G1	.016
Has commercially baked goods or pastries for breakfast	43	35	147	65	G1 > G2	.024
Takes two yoghurts and/or some cheese (40 g) daily	36	42	79	133	G2 = G1	.170
Takes sweets and candy several times every day	54	24	191	21	G1 > G2	.000

Group 1: children and adolescents in low socioeconomic status. Group 2: children and adolescents in high socioeconomic status. G1: Group 1. G2: Group 2. Significance levels were established with $p < .05$.

Discussion

After analyzed the sample, both groups exhibited healthy values, results were generally more satisfactory in the group with a better socioeconomic situation.

The significant differences in nutritional status variables, BMI, and waist-to-height ratio, suggest more favorable results in advantageous socioeconomic situation group, which is consistent with findings described by other studies where socioeconomic disadvantages are the main cause of unhealthy habits and diets (Greves, et al, 2014; Kastorini, 2016). Children and adolescents from lower socioeconomic groups tend to adopt unhealthy lifestyle and children with covered primary needs may lead a healthier lifestyle. Low socioeconomic status is associated with an increased prevalence of obesity (Miller, et al., 2020).

There were no significant differences genders in BMI, diet, and standing broad jump. The average score obtained in PAQ-C questionnaire shows a moderate level of physical activity, but male participants did score higher than female participants, which is consistent with findings described by other studies (Loyen, 2016) that demonstrate lower levels of physical activity in adolescent girls.

Regarding the boys in the entire sample, we found significant differences in favor of boys from the group with better socioeconomic status in speed, which could be explained by the decrease in physical activity of children from the group in a socioeconomic disadvantaged. Usually, in private schools the probabilities of practicing sports activities and be physical activity are higher than in the public schools and it could contribute to a better result in PAQ-C and scores in speed. The implementation of a sports project by the school appears as effective measure to increase the participation of children in physical activities (García & Suárez, 2020).

The significant differences between girls in BMI and waist-to-height ratio were in favor of group 2, which is in line with other studies (Cameron, 2012). In the same way, it would be possible to explain the differences in physical tasks, speed of movement, and explosive strength, which were all in favor of girls from group 2, because the probability of bad healthy habits increases when the poverty of sociodemographic areas increases (Sigmundová, et al., 2019). This can be explained because children from high socioeconomic status reported fewer barriers and more enablers to enhance physical activity, schools in disadvantaged areas need more effort to require addressing these barriers (Peralta, et al., 2019).

Our data show that both groups have a medium adherence to the Mediterranean diet, with no significant differences between boys and girls, which appears to reflect a recent tendency in Mediterranean countries to abandon the Mediterranean diet. Families from low-medium socioeconomic status tend to have low adherence to the Mediterranean diet (Arriscado, et al., 2014). This modification of dietary habits is especially evident in children and adolescents (García, et al., 2015).

There were differences in the kind of consumption food being healthier in the group with better socioeconomic condition. Significant differences in favor of group 2 in consumption of fish, pulses, olive oil, and dairy products at breakfast. The consumption of fast food, rice and pasta, pastries and sweets were found to

be greater in group 1, these results are consistent with those described by other studies (Miller, et al., 2020) in that people with low socioeconomic status tend to adopt unhealthy diets. There were no differences in the consumption of fruit, vegetables, nuts, cereal or grains at breakfast, yogurts or cheese. Our results show that more support is needed in schools located in economically disadvantaged areas, because a high prevalence of obesity in children has been found in these areas (Springer, et al., 2015).

In Spain, there are still differences in the levels of physical activity and exercise between girls and boys and it is important to highlight these gender differences. New ways of helping younger female students should be explored (Shervey & DiPerna, 2017).

Conclusions

In relation to nutritional status and physical fitness, there are significant differences in favor of girls of high social status in BMI, Waist-to-Height Ratio and physical fitness (speed and flexibility) regarding girls with socio-economic disadvantages. Boys with high social status show significant differences in PAQ-C regarding girls of the same group.

The scores obtained in the different tests are poor in both groups and especially in the most vulnerable groups such as the socioeconomically disadvantaged and girls compared to boys. Physical activity programs for socially excluded young people must consider the situation from a broad point of view, contextualizing the problems of young people and extending family support to ensure adherence to educational programs on physical activity.

Concerning to the Mediterranean diet, both groups show a medium adherence. Access to foods, such as fish, or the reduction of sugary foods in many cases depend on the economic and/or educational level where the child develops. Educational and aid programs could lead to inequality between children from differentiated social backgrounds.

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Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Clinical Research Ethics Committee of the Niño Jesús University Hospital (R0031/14).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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