Original Paper

Perceptions and Attitudes of Parents towards Overweight and Obesity among their Preschool-Aged Children in Karbala

Marwa Sami Hashim[1], Salam Sahib Abaid[1], Ahmad Mehdi Mohammed Ali Al-Saadi [2], Ali Abdulridha Kadhim Abutiheen[3*]

1 Karbala Health Directorate, Karbala, Iraq
2 Kerbela Teaching Hospital for Children, Karbala, Iraq
3 Department of Family & Community Medicine, College of Medicine – University of Kerbala, Karbala, Iraq

Abstract

Background: Obesity is a major public health problem and even children are a risky group, where obesity onset could start very early in life. The preschool years are critically important for child health, developmental, learning, and social outcomes. Prevention of childhood obesity is a high priority for public health, with parents being seen as influential in child weight-related behaviors.

Objectives: To estimate the prevalence of overweight and obesity among preschool children in Karbala city. And to assess the perception and attitude of parents towards their children's weight status.

Methods: A cross-sectional study was carried out in a five governmental and five private kindergartens in holy Karbala city between the 1st of February to the 30th of April 2017. A total of 200 children aged 45 to 60 months were included. The weight and height were estimated for each child and a questionnaire paper was filled by the parents in to identify their perception and attitudes towards overweight and obesity in their children using both the verbal scale and visual scale (pictogram).

Results: The prevalence of overweight was 20 % and of obesity was 18.5%, there was a highly significant relationship between weight status of the children and that of their parents, as about 85 % of overweight\ obese children, had an overweight\ obese fathers and mothers. Both the verbal scale and the visual scale showed a low sensitivity of 26% and 44% respectively. Sixty percent of parents prefer that their child being overweight or obese rather than being low or underweight and similar percent consider that overweight and obese children can still be healthy children. 71.5% perceived their children thinner than actual status.

Conclusion: More than one-third of preschool children in Karbala city were overweight or obese. The majority of parents misperceive their children's weight status where they perceive them thinner than normal. Parents are aware of the consequences of obesity, but many still not consider obesity in children as a problem. Parents have a major role in the nurture and development of their children, parental perception and attitudes play a crucial role in the weight status of their children and in future consequences of overweight and obesity.

Keywords: Childhood overweight and obesity, Overweight, Obesity, Parental Perceptions and Attitudes, Parental misperception. Preschool-aged children.

Introduction

Worldwide obesity has nearly tripled since 1975. The prevalence of overweight or obese children and adolescents aged 5–19 years increased more than four folds from 4% to 18% globally. Once considered a problem of high-income countries, overweight and obesity currently is on the rise in low- and middle-income countries. Where overweight and obesity is among the leading global risk factor for mortality and

*for correspondence email: aliabutiheen@yahoo.com

because obesity has its onset very early in life; therefore, children constitute a major group of this disease, it is thus imperative to lay at most importance on prevention of obesity in children and combat its progress. This increasing prevalence has compelled the World Health Organization (WHO) to include obesity on the list of the essential health problems in the world [1-4].

Several early life risk factors associated with the development of obesity, these factors are suitable targets for preventive interventions: genetic, birth weight, parental obesity, sleep duration, television viewing, nutrition, and physical inactivity. Among reasons to target childhood obesity, is that overweight and obese children and teens are much more likely to become obese as adults compared to normal body mass index (BMI) children, and second, it is more challenging for these adults to lose the excess weight once they become obese and the management of obesity in adults is difficult and often unsuccessful. Prevention of childhood obesity is important for reducing long-term complications of obesity [2,5,6].

Parents influence their child eating behavior and attitudes directly as food providers and indirectly through their parental feeding styles and feeding concerns and practices. They have great influence and the most common supervisor on their child's immediate environment, the nutritional, physical, social, and cultural interactions and activities that the child is subjected to daily. And young children are dependent on their parents for controlling their food and activity patterns. Therefore, the parents' role is crucial in the prevention and early treatment of childhood overweight. And a first step is to understand how do parents recognize, perceive, and behave with overweight and obesity and the nutritional status of their children [6-9].

Studies showed that parents who can identify that their child is overweight or obese appeared to be more concerned and had positive attitudes to modify family lifestyle, improve their children's diets, monitoring their child's food intake and encourage them to be more physically active. Compared to parents who incorrectly recognize their overweight or obese children's status. Further, to achieve better outcomes, intervention to control childhood overweight and obesity need to be initiated as early as possible in child life [10-12].

So, this study aims to estimate the prevalence of overweight and obesity among preschool children in Karbala city. And to assess the perception and attitude of parents towards their children's weight status.

Subjects and methods

A cross-sectional study was carried out in Karbala city for the period from the first of February to the 30th of April, 2017. Ten kindergartens in Karbala city (5 governmental and 5 private) were selected randomly by using a simple random sampling technique. All children present on days of the study in each kindergarten were eligible for the study.

Children aged 4-6 years who attended the selected kindergartens were included at the beginning, subjects that their parents did not complete the questionnaire were excluded from the study. Further, children with medical conditions that can affect their weight were also excluded.

A self-administered questionnaire was prepared and used for the purpose of study and filled by parents. It's composed of three sections. The first section includes some socio-demographic information on child and family including weight and height of the mothers and fathers. The second section includes questions to assess the perceptions of the parents about their children's weight status and this was assessed on two approaches. The first was the verbal scale of how parents perceive their preschooler child weight status with five responses: (Very thin, thin, normal, obese, very obese) and nine predetermined questions to identify how they make their perception about the child weight. While the second approach used for parental perception assessment was the Visual scale (pictogram). This

is a validated scale used for 2 to 6 years aged-old children, it's made up of seven body sizes that accounted for physical appearance based on gender (boys and girls) [3,6,13].

The third section includes Likert based questions to assess how parents perceived the causes, consequences, and attitudes of childhood overweight and obesity.

The weight and height were measured for each child, weight was measured with a well-calibrated scale, with children wearing minimal clothing and was barefooted. Weight was measured in kilograms with an accepted error of 0.1 kg. Height was measured in centimeter using a retractable tape measure, with the subject standing upright and looking straight ahead, with an accepted error of 0.1 cm. On average each child takes about 2-3 minutes.

Children body mass index (BMI) percentile was used to estimate the child weight status according to the Center for Disease Control and Prevention (CDC) classification table [14], as in table No.1: Ethical approval was obtained from the scientific council of Family Medicine in Arab Board for Health Specialization\ Iraq office. And approval from Karbala Directorate of Education. Further, children's and families information kept confidential and the participation was voluntary.

Data were analyzed using the Statistical Package for Social Sciences program (SPSS) version 24. Quantitative data were expressed in mean and standard deviation (SD). Qualitative data were expressed in frequency or numbers (N). Sensitivity, specificity, positive predictive value, negative predictive value, and accuracy were measured with a 95% confidence interval (CI) for the verbal scale and visual scale in comparison with the actual BMI category. Chi-square was used to assess the level of significance in different relationships. A p-value of less than 0.05 was considered statistically significant.

Results

Of the total 300 forms distributed 233 was returned making the response rate at 77.7%. A total of 200 children were included in the study, after exclusion of 33 non-complete forms. Whom one of their parents had filled the questionnaire. Of those, 133 (66.5%) of the children were from governmental kindergarten while the rest were from private ones. Their age ranged from 45 to 63 months with a mean and standard deviation of 56.39 and 4.81 months.

Females represent 51.5% of the sample, and the majority of the children were ranked first and were the only ones at preschool age in their families. And most families had an intermediate economic level as shown in table 2.

Based on the BMI measurement, the prevalence of overweight in this study was 20 % and obesity was 18.5 % as shown in figure 1. And there was no statistical association between the weight status of the children and the demographic factors as shown in table 3.

There was strong significant association between weight status of children and their parents' weight status, where 85.7% and 81.8 % of them had an overweight or obese fathers and mothers respectively. As shown in table 4.

Based on verbal scale parental perception in comparison with actual weight status by BMI % as shown in table 5.

Using the visual scale by the parental perception in comparison with actual weight status by BMI % as shown in table 6. The sensitivity of the visual scale was 44.16% with the 95% CI (32.84% to 55.93%). The specificity 99.19% and the 95% CI (95.55% to 99.98%). The Positive Predictive Value was 97.14%, and the 95% CI (82.61% to 99.59%). The Negative Predictive Value was 73.94%, and the 95% CI (69.92% to 77.59%). And the Accuracy 78.0%, and the 95% CI (71.61% to 83.54%).

In addition, based on the visual scale, 71.5% of the parents perceive their children thinner than their actual status and only

24% perceive their children body figure appropriately as shown in figure 2

Eating too much and inappropriate diet was more frequently recognized by parents as causes for overweight and obesity with more than 80%. While less than two-thirds of parents highlighted hereditary causes and increasing screen time as causes of obesity as shown in table 7. Further, only 40% of parents recognized childhood overweight as a health problem that needs medical care, and 60% prefer to have fatty child than being thin, and that a fatty child is healthy as shown in table 7.

Furthermore, regarding to consequences of obesity. The children being bullied and obesity problems to continue in later life were the most recognized consequences by parents with more than 90% as shown in table 8.

Table 1. Weight for height and BMI percentile for children [14]

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Normal or Healthy Weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Table 2. Demographic characteristics of the study sample

Variables (n=200)		N (%)
Gender	Male Female	97 (48.5%) 103 (51.5%)
Number of preschool children in the family	One child Two child More than two	86 (43%). 75 (37.5%) 39 (19.5%)
Rank of this child in the family	1st 2nd 3rd More than 3rd	90 (45%) 48 (24%) 29 (14.5%) 33 (16.5%)
Economic status	Weak Intermediate Good	14 (7%) 133 (66.5%) 53 (26.5%)
Total		200 (100%)

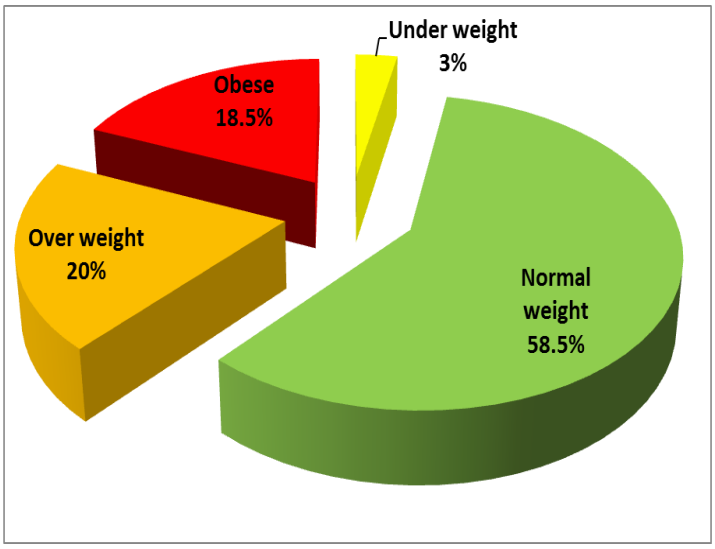

Figure 1. Distribution of children according to the BMI weight categories of obesity

Table 3. The association of demographic factors on the prevalence of overweight and obesity

Demographic factor		Weight status of the child		p-value
		Overweight / Obese N (%)	Non-overweight/ Obese N (%)	
Gender	Male Female	36(37.1) 41(39.8)	61(62.9) 62(60.2)	0.696
Numbers of preschool children in the family	One child Two children More than two	36(41.9) 26(34.7) 15(38.5)	50(58.1) 49(65.3) 24(61.5)	0.577
Rank of child in the family	1st 2nd 3rd More than 3rd	35(38.9) 21(43.8) 10(34.5) 11(33.3)	55(61.1) 27(56.3) 19(65.5) 22(66.6)	0.524
Economic status	Weak Intermediate Good	5(35.7) 51(38.3) 21(39.6)	9(64.3) 82(61.7) 32(60.4)	0.793

Table 4. The association between weight status of the children and the weight status of their parents

		Weight status of the child		P value
		Non-overweight	Overweight /obese	
Father	Non- overweight	59 (48%)	11 (14.3%)	< 0.001
	Overweight/obese	64 (52%)	66 (85.7%)	
Mother	Non- overweight	77 (62.6%)	14(18.2%)	< 0.001
	Overweight/obese	46 (37.4%)	63 (81.8%)	
Total		123 (61.5%)	77 (38.5%)	

Table 5. Verbal parental perception of their children weight status versus children real BMI status

		Weight status by BMI %		Total
		Overweight\ obese	Non-overweight\ obese	
Parental perception by verbal assessment	Overweight\ obese	True +ve 20	False +ve 16	36
	Non-overweight\ obese	False –ve 57	True –ve 107	164
Total		77	123	200

Table 6. Parental perception of their children weight status using visual scale versus children real BMI status.

		Weight status by BMI %		Total
		Overweight\ obese	Non-overweight\ obese	
Parental perception by Visual scale	Overweight\ obese	True +ve 34	False +ve 1	35
	Non-overweight\ obese	False –ve 43	True –ve 122	165
Total		77	123	200

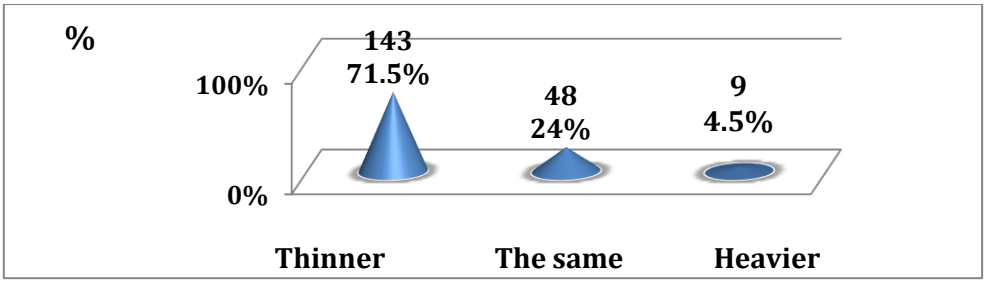

Figure 2. The overall difference in parental perceptions of their children body image in relation to their real body image

Table 7. Distribution of parental knowledge and attitudes regarding the causes and impact of overweight and obesity among children

	Agree N (%)	Disagree N (%)	Don't know N (%)
Overweight in children is caused by hereditary conditions	128(64)	44 (22)	28 (14)
Overweight in children is caused by inappropriate diet	161 (80.5)	23 (11.5)	16(8)
Overweight in children is caused by to little exercise	156 (78)	36 (18)	8 (4)
Overweight in children is caused by eating too much	167 (83.5)	27 (13.5)	6 (3)
Overweight in children is caused by too much screen watching	127 (63.5)	54 (27)	19 (9.5)
I would prefer my children to have too much body fat than not enough	121 (60.5)	75 (37.5)	4 (2)
Overweight\ obese children can still be healthy children	120 (60)	69 (34.5)	11 (5.5)
Overweight in children goes away by itself, as they grow up	154 (77)	20 (10)	26 (13)
Overweight in children is a problem requiring medical care	81 (40.5)	102 (51)	17 (8.5)

Table 8. Distribution of parental knowledge about consequences of overweight and obesity among children.

	Agree N (%)	Disagree N (%)	Don't know N (%)
Problems keeping up with other children during play	166 (83)	30 (15)	4(2)
Problems with being bullied	185 (92.5)	11 (5.5)	4 (2)
Problems with overweight later in life	181 (90.5)	9 (4.5)	10 (5)
Problems with heart disease later in life	148 (74)	30 (15)	22 (11)
Problems with diabetes later in life	143 (71.5)	35 (17.5)	22 (11)

Discussion

More than one-third of the children were overweight and obese. This is higher than the results of previous studies in Hilla, Baghdad and Basrah cities in Iraq [15-18]. This could highlight that the prevalence of overweight and obesity among preschool children as well as other age groups is increasing in Iraq during the last years [17,19].

Children's weight status had a significant association with the weight status of both of their fathers and mothers' weight status, and this agrees with other studies and could be related to hereditary or social causes [11,20]. However, there was no significant association between child weight status and gender, the number of preschool children in the family, his rank in the family, or family economic status, and this agrees with a study conducted in Kuwait [21].

Both the verbal scale and the visual scale showed low sensitivity in identifying obesity status among children. However, the sensitivity of the visual scale was higher than the verbal scale. As a result, the majority of the parents perceive the overweight status of their children incorrectly. These findings agree with other studies that reported high misperception rates among parents of overweight/obese children. Where this misperception was more obvious among younger and preschool children than older children [6,21-24].

In relation to the above notes 71% of parents perceive their children thinner than their real physical status and this agree with other studies where most parents tend to perceive their children thinner than their real weight rather than being fattier [6,23-25]. This misperception is an important issue that parents need to consider it in two ways. Firstly, in trying to control their own weight status, because they are role models for their children. And secondly to take early steps in monitoring and control their children's weight. In addition, the health care provider should consider this issue and work to overcome this misperception and what can result from it.

When parental attitude towards obesity was assessed, only 40% of parents considered overweight in children a problem requiring medical care. Further, 60% agree that overweight and obese children can still be healthy children and a similar percentage of parents prefer their children to be overweight or obese rather than being underweight. While a high percentage identified diet, excess eating, and little exercise, lower proportion recognized the increased screening time as a risk factor. And screen time is referring to the time spent on watching TV and other electronics, which is increasingly risky behavior for childhood obesity. On the other hand, there was an acceptable parental perception on future consequences of overweight and obesity on their children including, physical, mental, or social problems. Where parental attitudes and concerns toward obesity are important for providing and securing healthy lifestyle for their children. Adversely, there is a risk that parents can model negative attitudes towards the body of their children. Keeping in mind that it is important for the health care provider to assess and deal properly with these parental attitudes and concerns as early as possible in children's life [20,22,25-29].

Limitation of the study could include the subjectivity of opinions of the participants as it's based on a self–administered questionnaire, and both the verbal and visual scales are prone to bias. Further, the parental weight status measurement was based on their personal interpretation of their weight status. But up to our knowledge, this is the first study done in Karbala to assess parental perception regarding their children's weight. Though it's a single city study, and the sample size is moderate in size. But the methodology used, number and random approach of kindergarten involved can make the results more generalizable and of great importance to families, health providers, and baseline data for policymakers.

Conclusion

The prevalence of overweight and obesity was high among preschool children in Karbala city, and there was a significant association between children with the weight status of both their fathers and mothers. The majority of parents misperceive their children's weight status where they perceive them thinner than normal. Both the verbal scale and Visual scale had low sensitivity in identifying child weight status. So we cannot rely on them in assessing children's weight status.

Parents are aware of the consequences of obesity, but many still not consider obesity in children as a problem. Where Parents have a major role in the nurture and development of their children. Also, parental perception and attitudes play a crucial role in the weight status of their children and in future consequences of overweight and obesity and this role should be understood and

properly taken as early as possible from the early days of life. Health care providers need to assess children's weight status and to council or educate parents regarding their knowledge and attitude towards overweight and obesity from all its aspects. Further, educational programs targeting kindergartens on how to provide a healthy environment, and monitoring overweight and obesity among children.

References

1. World Health Organization. Obesity and overweight fact sheets. Available at https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight Accessed on 23-9-2019
2. World Health Organization. Obesity: Obesity\Overview. Available at https://www.who.int/health-topics/obesity#tab=tab_1 Accessed on 23-9-2019
3. Pandita A, Sharma D, Pandita D, Pawar S, Tariq M, Kaul A. Childhood obesity: prevention is better than cure. Diabetes, metabolic syndrome and obesity: targets and therapy. 2016;9:83.
4. Caraza KL, de Ita JR, Guzmán JS, Aguirre JS, Montealvo DA, Barrios VM. Altered perception of the nutritional status of preschoolers by their parents: A risk factor for overweight and obesity. Arch Argent Pediatr. 2016;114:237-42.
5. Pocock M, Trivedi D, Wills W, Bunn F, Magnusson J. Parental perceptions regarding healthy behaviors for preventing overweight and obesity in young children: a systematic review of qualitative studies. Obesity reviews. 2010 May 1;11:338-53.
6. Luttikhuis HG, Stolk RP, Sauer PJ. How do parents of 4-to 5-year-old children perceive the weight of their children?. Acta Paediatrica. 2010;99:263-7.
7. Rietmeijer-Mentink M, Paulis WD, Middelkoop M, Bindels PJ, Wouden JC. Difference between parental perception and actual weight status of children: a systematic review. Maternal & child nutrition. 2013 Jan 1;9:3-22.
8. Pai HL, Contento I. Parental perceptions, feeding practices, feeding styles, and level of acculturation of Chinese Americans in relation to their school-age child's weight status. Appetite. 2014 Sep 1; 80:174-82.
9. Heimuli JM. Pacific Island Families Study: Parental perceptions of overweight obesity and future concern for child's weight status (Doctoral dissertation, Auckland University of Technology) 2009.
10. Alexander DS, Alfonso ML, Cao C, Wright AR. Do Maternal Caregiver Perceptions of Childhood Obesity Risk Factors and Obesity Complications Predict Support for Prevention Initiatives Among African Americans?. Maternal and Child Health Journal. 2017 Jul 1;21:1522-30.
11. Sylvetsky-Meni AC, Gillepsie SE, Hardy T, Welsh JA. The impact of parents' categorization of their own weight and their child's weight on healthy lifestyle promoting beliefs and practices. Journal of obesity. 2015;2015:307381-.
12. Swyden K, Sisson SB, Lora K, Weedn A, Morris AS, DeGrace B, Copeland KA. Relationship between parental perception and concern for child weight and influence on obesogenic parenting practices. Adv Pediatr Res. 2015 May 13;2:1-9.
13. Collins ME. Body figure perceptions and preferences among preadolescent children. International Journal of Eating Disorders. 1991 Mar 1;10:199-208.
14. Center for the disease control and prevention (CDC) \ Healthy weight available at: https://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html (accessed at September 29, 2017)
15. Jawad IH, Al Jebory KH, Baey HA. Assessment of Nutritional Status among Children less than 5 years old in Hilla City. International Journal of Scientific and Research Publications, 2016; 6:276-280.
16. Abdulla MM. Assessment and determinants of nutritional status in a sample of under five-year-old Iraqi children. Eur J Biol Med Sci Res. 2016 Sep;4:1-24.
17. Naji HA, Abdulla MM. Prevalence and risk factors associated with overweight and obesity among under than 5 years children. Iraqi Journal of Medical Sciences. 2013;11:311-7
18. Musa WA, Hassan MK. Overweight and obesity among preschool children in Basrah. The Medical Journal of Basrah University. 2010;28:1-8.
19. Almahfoodh D, Alabbood M, Alali A, Mansour A. Epidemiology of type 1 diabetes mellitus in Basrah, Southern Iraq: a retrospective study. diabetes research and clinical practice. 2017 Nov 1;133:104-8.
20. Mareno N. Parental perception of child weight: a concept analysis. Journal of Advanced Nursing. 2014 Jan 1;70:34-45.
21. Al-Qaoud NM, Al-Shami E, Prakash P. Kuwaiti mothers' perception of their preschool children's weight status. Journal of Developmental & Behavioral Pediatrics. 2010 Jul 1;31:505-10
22. Aljunaibi A, Abdulle A, Nagelkerke N. Parental weight perceptions: a cause for concern in the

prevention and management of childhood obesity in the United Arab Emirates. PLoS One. 2013;8.
23. Rietmeijer-Mentink M, Paulis WD, van Middelkoop M, Bindels PJ, van der Wouden JC. Difference between parental perception and actual weight status of children: a systematic review. Maternal & child nutrition. 2013 Jan;9:3-22.
24. McKee C, Long L, Southward LH, Walker B, McCown J. The role of parental misperception of child's body weight in childhood obesity. Journal of pediatric nursing. 2016 Mar 1;31:196-203.
25. Wright DR, Lozano P, Dawson-Hahn E, Christakis DA, Haaland WL, Basu A. Parental optimism about childhood obesity-related disease risks. International Journal of Obesity. 2017 Oct;41:1467-72.
26. Kain J, Leyton B, Baur L, Lira M, Corvalán C. Demographic, social and health-related variables that predict normal-weight preschool children having overweight or obesity when entering primary education in Chile. Nutrients. 2019 Jun;11:1277.
27. Mehdizadeh A, Nematy M, Vatanparast H, Khadem-Rezaiyan M, Emadzadeh M. Impact of Parent Engagement in Childhood Obesity Prevention Interventions on Anthropometric Indices among Preschool Children: A Systematic Review. Childhood Obesity. 2020 Jan;16:3-19.
28. Slater A, Bowen J, Corsini N, Gardner C, Golley R, Noakes M. Understanding parent concerns about children's diet, activity and weight status: an important step towards effective obesity prevention interventions. Public health nutrition. 2010 Aug;13:1221-8.
29. Kościcka K, Czepczor K, Brytek-Matera A. Body size attitudes and body image perception among preschool children and their parents: a preliminary study. Archives of Psychiatry and Psychotherapy. 2016 Dec 1; 4:28-34.