International Journal of Community Medicine and Public Health
Alradha AH et al. Int J Community Med Public Health. 2021 Oct;8(10):5079-5083
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20213655

Review Article

Role of counseling in the prevention of childhood obesity

Abdulaziz Habib Alradha[1]*, Maha Aid Aljumaie[2], Reem Basher Alanzi[3], Bushra Haider Alqurashi[4], Faris Saleh Aldhawi[5], Nura Saleh Alqayawi[6], Mariah Omar Alahmadi[7], Raneem Ibrahim Farran[7], Wed Ahmed Alayyafi[8], Razan Abdulshakur Niyazi[9], Sumih Abdullah Alsadq[10]

[1]Department of Pediatrics, Al Aziziyah Children Hospital, Jeddah, Saudi Arabia
[2]Primary Health Care, Ministry of Health, Taif, Saudi Arabia
[3]College of Medicine, Princess Nourah Bint Abdul Rahman University, Riyadh, Saudi Arabia
[4]General Physician, King Abdulaziz Hospital, Jeddah, Saudi Arabia
[5]Emergency Medical Services, King Khalid Hospital, Najran, Saudi Arabia
[6]General Physician, Ministry of Health, Riyadh, Saudi Arabia
[7]College of Medicine, Umm Al-Qura University, Mecca, Saudi Arabia
[8]Department of Internal Medicine, Hera General Hospital, Mecca, Saudi Arabia
[9]Department of Pediatrics, Maternity and Children Hospital, Mecca, Saudi Arabia
[10]College of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

Received: 28 August 2021
Accepted: 02 September 2021

***Correspondence:**
Dr. Abdulaziz Habib Alradha,
E-mail: enass.farouk@yahoo.com

ABSTRACT

Children tend to gain weight and develop obesity by the age of 9 months old. Therefore, it is essential to apply early interventions as early as this period because childhood obesity does not usually spontaneously resolve by age. Medical counseling with obese children and their caregivers is an essential interventional approach that can enhance the quality of care and the related outcomes. In this literature review, we have discussed the role of professional counseling in the management of pediatric obesity. Healthcare professionals can help caregivers to establish proper dietary intake with specific amounts of calories based on the administered food items per day to maintain healthy dietary habits. Taking care of any associated morbidities should also be considered. For instance, adequate care should be provided for obese children with DM to help them maintain optimal blood glucose levels by using healthy diets, exercising, and taking blood glucose-lowering medications. However, precautions should be considered as these patients might be subjected to hypoglycemic attacks as a result, which might increase their morbidity and mortality. Children and caregivers' education is a critical approach to enhance compliance and increase awareness of the management and interventions. Finally, further efforts should also be directed to the healthcare givers to make them more aware of the benefits of sticking to the guidelines and the importance of counseling in prevention and management.

Keywords: Pediatrics, Obesity, Family medicine, Management

INTRODUCTION

The obesity epidemic affects many patients all over the world with variable morbidities and complications that might end up with death. For instance, estimates from the United States show that 32% of children and around 70% of adults are obese or overweight.[1-3] Many chronic health disorders have been reported with obesity which leads to increased cost of healthcare for obese patients, decreased

quality of life, and elevated psychological distress.[4,5] Besides, studies have also demonstrated that the risk of cardiovascular diseases and metabolic syndrome usually increases when the patient's weight also increases.[4,6] Accordingly, it is essential to apply early interventions for obese children, because these children are usually at higher risks of having higher body mass indices. Furthermore, it has been furtherly demonstrated that the risk of obesity also increases with age and with a high body mass index.[7,8] Children tend to gain weight and develop obesity by the age of 9 months old. Therefore, it is essential to apply early interventions as early as this period because childhood obesity does not usually spontaneously resolve by age.[9,10] Medical counseling with obese children and their caregivers is an essential interventional approach that can enhance the quality of care and the related outcomes.[11] In this study, we aim to discuss the role of counseling in the prevention of childhood obesity based on evidence from the current studies in the literature.

METHODS

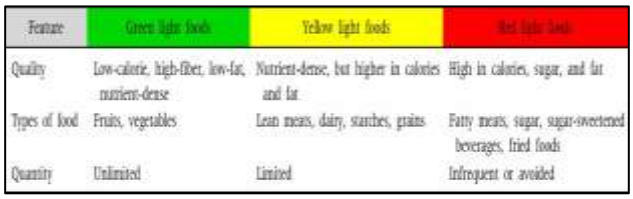
This literature review is based on an extensive literature search in Medline, Cochrane, and EMBASE databases which was performed on 9th August 2021 using the medical subject headings (MeSH) or a combination of all possible related terms.[12,13] This was followed by the manual search for papers in Google Scholar while the reference lists of the initially included papers.[14,15] Papers discussing the role of counseling in the prevention of childhood obesity were screened for relevant information, with no limitation on date, language, age of participants, or publication type.

DISCUSSION

The first step in achieving better management of pediatric obesity is to adequately screen and early diagnose patients with obesity as depicted by the American Academy of Pediatrics.[16,17] However, it has been reported among studies in the literature that many healthcare providers are not aware of the current guidelines and practices about the management and intervention measures against pediatric obesity.[18,19] However, it should be noted that among professionals that have adequate experience and others that received adequate training, they indicated the importance of sticking to the recommendations and guidelines.[19,20] Counseling as a preventive measure against obesity in the pediatric population can be conducted on various steps that should be adequately approached by a healthcare professional. At first, healthcare professionals should draw a plan that would maintain a routine daily log of adequate fluid and dietary intake. To do this, data regarding the unhealthy or bad dietary habits of children should be collected from these children or their caregivers.[21-23] Skipping meals or irregular dietary intake, excessive eating, increased intake of substrates that contain too much sugar, reduced intake of vegetables, excessive intake of high trans-fat foods, eating near to sleep time during the night, and frequent intake of chocolates and candies are some of the bad or unhealthy dietary habits that have been reported by most obese children and their caregivers. Additionally, the rate or frequency of the daily practice of these dietary habits is also another risk factor for obesity and developing unhealthy dietary patterns that might intervene with the proper drawing of a suitable plan that would achieve the routine daily log of adequate fluid and dietary intake. Using the 24-hour recalling approach or asking patients or their caregivers to provide their routine dietary intake in diaries are two approaches that have been reported in the literature to help healthcare professionals in their dietary assessments.[24,25] The reference to the daily dietary intake has been adequately established and introduced according to the Institute of Medicine of National Academics within the United States.[26] Moreoner, the targeted age groups in this announcement include 9-18, 3-8 years old, and 0-36 months. Furtherly, the age group 0-36 months has been classified to calculate the estimated energy requirement (EER) into additional four groups. On the other hand, the 3-8 years old age group is stratified according to sex to interpret their EER. Similarly, a different EER equation has also been reported for the 9-18 years old group based on sex. Very active, active, low active, and sedentary lifestyles are the main physical activities that were included in the equation. The dietary reference intake has also been reported to be variable across the different nations and the preference of their dietary cultures and daily intake of the different dietary components. Therefore, establishing suitable dietary intake is the responsibility of the healthcare professional based on the preference of the dietary components and healthcare guidelines in their systems.

Using the Traffic Light Diet has been reported as a validated approach to successfully achieve professional obesity counseling for the pediatric population.[27] This approach can be seen in Figure 1, where it has been summarized. It is considered an easy and simple approach that can be easily interpreted and applied. According to the approach, the daily dietary intake consists of red, yellow, and green diets. Each of these colors should be furtherly assessed and considered regarding other aspects as type, quality, and quantity of foods. Red light food consists of dietary components that are high in calories, including fat and sugar. Such dietary components are usually found in fatty meals, fried food, sugar additive beverages and sugar. Avoiding or frequently intaking red light meals should be recommended by healthcare professionals. On the other hand, yellow light diets are usually nutrient-dense, however, these might also have high caloric values. In addition to meat, yellow light diets might also contain fats, starch, dairy, and grain in the routine dietary plan. Appropriate intake of the yellow light diets by choosing adequate amounts should also be recommended during counseling by healthcare professionals. In another context, green light diets are the ones that should be used with no limits by children which should be encouraged by their healthcare givers to adequately intake these types of meals. In addition, greenlight diets are usually composed of high-fiber, low-calorie, nutrient-dense and low-fat components.

This usually represents the abundant amounts of vegetables and fruits.



Feature	Green light foods	Yellow light foods	Red light foods
Quality	Low-calorie, high-fiber, low-fat, nutrient-dense	Nutrient-dense, but higher in calories and fat	High in calories, sugar, and fat
Types of food	Fruits, vegetables	Lean meats, dairy, starches, grains	Fatty meats, sugar, sugar-sweetened beverages, fried foods
Quantity	Unlimited	Limited	Infrequent or avoided

Figure 1. The traffic light diet plan.[27]

Furthermore, nutritional counseling is also important for patients with special conditions, as diabetes mellitus (DM). DM has two main types including type I and II. Estimates show that the prevalence of obesity among children is 96% in type II and 24% in type I.[28] In type I DM, children suffer from auto-immune destruction of their pancreatic insulin secretory beta cells, and therefore, serum insulin concentration is always disturbed, irrespective of their dietary intake. Accordingly, obesity counseling is an important step in the management of these patients to obtain better outcomes and enhance the quality of life for these children. The main approaches are to enhance children's compliance to their dietary plans, maintain normal development and growth, step-by-step guidance, enhancing the nutritional status of these children, and maintaining optimal blood glucose levels.[29] On the other hand, it has been demonstrated that careless caregivers about the dietary habits of their children are the main causes for the development of type II DM at this early age.[30] Skipping meals and over-snacking are the main unusual dietary habits that have been observed for these patients. Besides, non-appetite-related dietary habits, including emotional eating, boredom, and media-masked eating, are also observed among adolescents which might also be potential causes of the unhealthy dietary habits.[30] Issues regarding obesity are furtherly doubled among type II diabetic children because they usually have a history of poor compliance and unhealthy dietary habits.[31] Therefore, counseling is so important for these patients. Maintaining healthy diets is an important step in achieving proper management of DM because it has been demonstrated that every single snack and meal can significantly affect the blood glucose levels of diabetic patients.[29] Consequently, educating diabetic children about their healthy dietary habits is an important approach that should be considered during counseling.[32] Routine intake of consistent and regular daily calories is critical for diabetic patients. Management of the blood glucose levels can then be easily obtained by maintaining the healthy dietary intake, insulin, or other hypoglycemic agents administration, in addition to regularly practicing exercises. Moreover, healthcare professionals should ask patients or their caregivers to have a diary for their blood glucose recordings to achieve long-term favorable outcomes. Daily management diaries have been reported to be even more efficacious and should consist of the frequency of glucose intake amid each meal, daily exercises based on the dietary periods, and the frequency of dietary intake. By using the Food Exchange Table (which is discussed below), clinicians and healthcare professionals might find it easy to make an appropriate dietary plan to decide the suitable daily caloric intake to achieve better management and enhance children's compliance under the supervision of their caregivers. It should also be noted that having hypoglycemia when diabetic might affect treatment compliance in diabetic children. Accordingly, it is essential to prevent the development of hypoglycemia in obese patients with DM to enhance compliance and obtain better outcomes. Children should be educated about the diets that might rapidly elevate the blood glucose levels to intervene against any potential hypoglycemic attack.

Additionally, using exchange units for each dietary component is recommended for each meal to adequately estimate the caloric intake and enhance compliance.[33] Six food groups have been stratified, including fish and meat, vegetables, grains, milk, fruits, and oil-fats. Each of these groups has been associated with a standard caloric unit according to the evidence in the literature to help patients decide the suitable amount of food from each group, and one exchange unit can only be used for a single food group. For instance, a piece of bread can substantially replace a one-third bowel that is full of rice, however, 40 grams of meats cannot. Based on the evidence from previous investigations regarding the Food Echange Table, healthcare professionals can effectively enhance the dietary plans of their patients by estimating the adequate daily dietary intake. Besides, using the table in diabetic patients has also been validated as an efficacious modality that might help obese diabetic patients to achieve better management outcomes by better counseling. Furthermore, the Americal Diabetes Association has previously issued the use of the Food Exchange Table for dietary counseling for obese children.[34] The composition of the administered food is an essential measure to achieve an ideal caloric intake. “My Plate” is nutrition guidance that was previously published by the United States Department of Agriculture. It is designated to divide the dietary components into five major food groups. Moreover, this system has effectively replaced the older MyPyramid guidance that was also depicted by the same organization in June 2011.[35] Another dietary guidance was also validated and established by the Irish food pyramid.[36] The Korean Nutrition Society has divided food components into six major types, including fish and meat, vegetables, grains, milk, fruits and oil-fats, as previously mentioned with established certain amounts for each component that would maintain a suitable daily caloric intake.[36,37] It should be noted that fruits and dairy products should be administered by one or two times daily, according to this guide. Adequate water consumption is also important to enhance the outcomes and maintain healthy caloric intake. Previous investigations have also stressed the importance of interventional approaches within the socio-economic framework in achieving better outcomes, in addition to the effect of counseling.[38] Family, peers, and communities all have significant roles in shaping the appropriate interventional measures for their obese pediatrics, which

might be significantly impacted by the behavioral measures of these parameters. Figure 2 represents recommendations for healthcare providers regarding the socioeconomic framework to intervene against obesity.

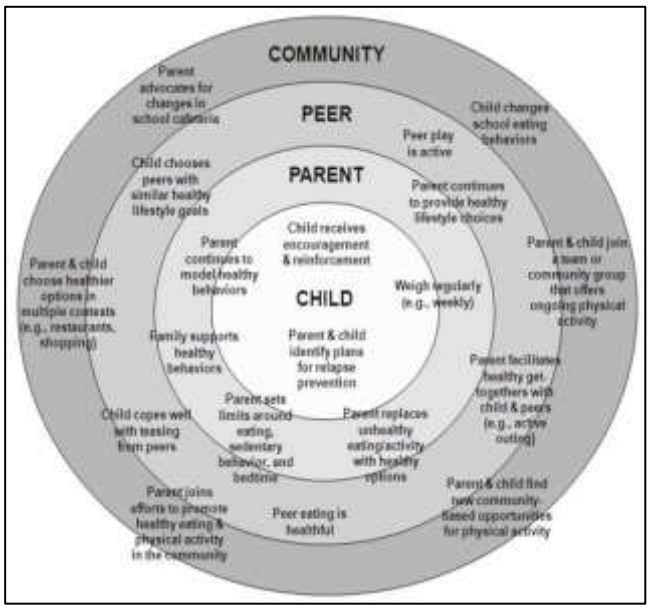


Figure 2. Recommendations for healthcare providers regarding the socioeconomic framework to intervene against obesity.[38]

CONCLUSION

Healthcare professionals can help caregivers to establish proper dietary intake with specific amounts of calories based on the administered food items per day to maintain healthy dietary habits. Furthermore, taking care of any associated morbidities should also be considered. For instance, adequate care should be provided for obese children with DM to help them maintain optimal blood glucose levels by using healthy diets, exercising, and taking blood glucose-lowering medications. However, precautions should be considered as these patients might be subjected to hypoglycemic attacks as a result, which might increase their morbidity and mortality. Children and caregivers' education is a critical approach to enhance compliance and increase awareness of the management and interventions. Finally, further efforts should also be directed to the healthcare givers to make them more aware of the benefits of sticking to the guidelines and the importance of counseling in prevention and management.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in US children and adolescents, 2007-2008. Jama. 2010;303(3):242-9.
2. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. Jama. 2006;295(13):1549-55.
3. Flegal KM, Carroll MD, Ogden CL, Curtin LR. Prevalence and trends in obesity among US adults, 1999-2008. Jama. 2010;303(3):235-41.
4. August GP, Caprio S, Fennoy I. Prevention and treatment of pediatric obesity: an endocrine society clinical practice guideline based on expert opinion. The Journal of clinical endocrinology and metabolism. 2008;93(12):4576-99.
5. Luppino FS, de Wit LM, Bouvy PF. Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Archives of general psychiatry. 2010;67(3):220-9.
6. Weiss R, Dziura J, Burgert TS. Obesity and the metabolic syndrome in children and adolescents. The New England journal of medicine. 2004;350(23):2362-74.
7. Stovitz SD, Pereira MA, Vazquez G, Lytle LA, Himes JH. The interaction of childhood height and childhood BMI in the prediction of young adult BMI. Obesity (Silver Spring, Md). 2008;16(10):2336-41.
8. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. The New England journal of medicine. 1997;337(13):869-73.
9. Moss BG, Yeaton WH. Young children's weight trajectories and associated risk factors: results from the Early Childhood Longitudinal Study-Birth Cohort. American journal of health promotion : AJHP. 2011;25(3):190-8.
10. Wilfley D, Vanucci A, White E, Freemark M. Contemporary endocrinology: pediatric obesity: etiology, pathogenesis and treatment. 2010.
11. Barton M. Screening for obesity in children and adolescents: US Preventive Services Task Force recommendation statement. Pediatrics. 2010;125(2):361-7.
12. Ghozy S, Tran L, Naveed S. Association of breastfeeding status with risk of autism spectrum disorder: A systematic review, dose-response analysis and meta-analysis. Asian J Psychiatr. 2020;48:101916.
13. Mahmoud AR, Dahy A, Dibas M, Abbas AS, Ghozy S, El-Qushayri AE. Association between sarcoidosis and cardiovascular comorbidity: A systematic review and meta-analysis. Heart Lung. 2020;49(5):512-7.
14. Ghozy S, Nam NH, Radwan I. Therapeutic efficacy of hepatitis B virus vaccine in treatment of chronic HBV infections: A systematic review and meta-analysis. Rev Med Virol. 2020;30(3):e2089.
15. Hashan MR, Ghozy S, El-Qushayri AE, Pial RH, Hossain MA, Al Kibria GM. Association of dengue disease severity and blood group: A systematic review and meta-analysis. Rev Med Virol. 2021;31(1):1-9.

16. Krebs NF, Jacobson MS. Prevention of pediatric overweight and obesity. Pediatrics. 2003;112(2):424-30.
17. Barlow SE. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. Pediatrics. 2007;120 Suppl 4:S164-92.
18. Rhodes ET, Ebbeling CB, Meyers AF. Pediatric obesity management: variation by specialty and awareness of guidelines. Clinical pediatrics. 2007;46(6):491-504.
19. Klein JD, Sesselberg TS, Johnson MS. Adoption of body mass index guidelines for screening and counseling in pediatric practice. Pediatrics. 2010;125(2):265-72.
20. Young PC, DeBry S, Jackson WD. Improving the prevention, early recognition, and treatment of pediatric obesity by primary care physicians. Clinical pediatrics. 2010;49(10):964-9.
21. Reid AE, Chauhan BF, Rabbani R. Early Exposure to Nonnutritive Sweeteners and Long-term Metabolic Health: A Systematic Review. Pediatrics. 2016;137(3):e20153603.
22. Lu L, Xun P, Wan Y, He K, Cai W. Long-term association between dairy consumption and risk of childhood obesity: a systematic review and meta-analysis of prospective cohort studies. European journal of clinical nutrition. 2016;70(4):414-23.
23. Cecchini M, Sassi F, Lauer JA, Lee YY, Guajardo-Barron V, Chisholm D. Tackling of unhealthy diets, physical inactivity, and obesity: health effects and cost-effectiveness. Lancet (London, England). 2010;376(9754):1775-84.
24. Yon BA, Johnson RK, Harvey-Berino J, Gold BC. The use of a personal digital assistant for dietary self-monitoring does not improve the validity of self-reports of energy intake. Journal of the American Dietetic Association. 2006;106(8):1256-59.
25. Dubin SM, Vadivelu J, Copur-Dahi N. A Simple Dietary Questionnaire Correlates With Formal Dietitian Evaluation and Frequently Identifies Specific Clinical Interventions in an Outpatient Gastroenterology Clinic. J Clin Gastroenterol. 2016;50(8):e71-6.
26. Lupton JR, Brooks J, Butte N, Caballero B, Flatt J, Fried S. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. National Academy Press: Washington, DC, USA. 2002;5:589-768.
27. Gahagan S. Overweight and obesity. 2021.
28. Scott CR, Smith JM, Cradock MM, Pihoker C. Characteristics of youth-onset noninsulin-dependent diabetes mellitus and insulin-dependent diabetes mellitus at diagnosis. Pediatrics. 1997;100(1):84-91.
29. Connell JE, Thomas-Dobersen D. Nutritional management of children and adolescents with insulin-dependent diabetes mellitus: a review by the diabetes care and education dietetic practice group. Journal of the American Dietetic Association. 1991;91(12):1556-64.
30. Svoren B, Jospe N, Kliegman R. Nelson textbook of pediatrics. 2016.
31. Pulgaron ER, Delamater AM. Obesity and type 2 diabetes in children: epidemiology and treatment. Current diabetes reports. 2014;14(8):508.
32. Gidding SS, Dennison BA, Birch LL. Dietary recommendations for children and adolescents: a guide for practitioners. Pediatrics. 2006;117(2):544-59.
33. Ju D, Jang H, Cho Y. Korean Food Exchange Lists for Diabetes: Revised 2010. The Korean Journal of Nutrition. 2011;44:577-91.
34. Khan MN, Kalsoom S, Khan AA. Food Exchange List and Dietary Management of Non-Communicable Diseases in Cultural Perspective. Pakistan journal of medical sciences. 2017;33(5):1273-8.
35. Levine E, Abbatangelo-Gray J, Mobley AR, McLaughlin GR, Herzog J. Evaluating MyPlate: An Expanded Framework Using Traditional and Nontraditional Metrics for Assessing Health Communication Campaigns. Journal of Nutrition Education and Behavior. 2012;44(4):S2-12.
36. Herforth A, Arimond M, Álvarez-Sánchez C, Coates J, Christianson K, Muehlhoff E. A Global Review of Food-Based Dietary Guidelines. Advances in Nutrition. 2019;10(4):590-605.
37. Comerford KB, Miller GD, Boileau AC, Masiello Schuette SN, Giddens JC, Brown KA. Global Review of Dairy Recommendations in Food-Based Dietary Guidelines. Frontiers in Nutrition. 2021;8(247).
38. Wilfley DE, Kass AE, Kolko RP. Counseling and behavior change in pediatric obesity. Pediatric clinics of North America. 2011;58(6):1403-24.

Cite this article as: Alradha AH, Aljumaie MA, Alanzi RB, Alqurashi BH, Aldhawi FS, Alqayawi NS et al. Role of counseling in the prevention of childhood obesity. Int J Community Med Public Health 2021;8:5079-83.