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Research Article

### AWARENESS OF PARENTS REGARDING HEALTHY LIFE AND DIET FOR CHILDREN AGED 15 YEARS OR LESS IN THE KINGDOM OF SAUDI ARABIA

Dr. Najya Abdullah Attia<sup>1</sup>, Dr. Abdullah Saleh Alshaibani<sup>2</sup>, Dr. Mayada Saleh Altwerqe<sup>2</sup>,  
Dr. Abeer Suliman Alkahmus<sup>2</sup>, Dr. Natalie Mahmoud Alhousami<sup>2</sup>, Dr. Abdulaziz Ahmed  
Alamri<sup>2</sup>, Dr. Abdullah Mohammed AlGhamdi<sup>2</sup>, Dr. Abdullah Saeed Alzahrani<sup>2</sup>,  
Dr. Muhannad Ahmed Alzahrani<sup>2</sup>, Dr. Anas Abdullah Alalyani<sup>2</sup>, Dr. Rayan Nasser  
Alshuaylan<sup>2</sup>, Dr. Hatim Ali Alsaedi<sup>2</sup>, Dr. Faleh Matuq Alnefaie<sup>2</sup>, Dr. Bader Sami Alotaibi<sup>3</sup>  
and Dr. Nasser Mohammed Altowairqi<sup>3</sup>

<sup>1</sup> Assistant Professor & Consultant of Pediatric, Department of pediatrics, king Abdulaziz  
Medical City, Jeddah, KSA.

<sup>2</sup> Service Doctor, MD, KSA

<sup>3</sup> Medical intern, MBBS, KSA.

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#### Abstract:

**Background:** Children and adolescents healthy life and healthy diet is parents' responsibilities. Parents should provide healthy options for their children for healthy life. There is paucity of studies on the role of parents in their children healthy life. This research emerged to investigate parents' awareness regarding healthy life and diet for children aged 15 years or less in the Kingdom of Saudi Arabia.

**Methods:** A descriptive, correlational cross-sectional design was employed for this study. Since this study aimed to assess parents' awareness about healthy life and diet for children at a single point of measurement, this is the most appropriate design. Population were parents of children aged 15 years or less in KSA. Study instrument consisted of two domains. First is sociodemographic characteristics of participants. Second is awareness assessment.

**Results:** Study included 450 parents' interviews. The interview was with father among 79 participants (17.6%) while it was with the mother among 276 (61.3%) participants. Both parents were present in 95 interviews (21.1%). The mean father age was 35.96 + 5.78 years and ranged from 23 to 47 years. On the other hand, the mean mother age was 30.43 + 4.95 and ranged from 23 to 39 years. The most frequent level of education among fathers was school (n= 205, 45.6%) while among mothers was university level (n= 209, 46.4%). Participants had high knowledge regarding the frequency of dairy, fruit, vegetables and cereals and grains food groups and they lack knowledge regarding meat, fish, egg and nuts. Furthermore, most participants had good attitudes toward food groups that should be eaten more and food groups that should be eaten less. There were 11.1% of participants showed high attitude (n= 50). Knowledge and attitude were statistically significant with higher educational level (P= 0.034), rural residency (P<0.001) and high family income (P= 0.003).

**Conclusion:** Many public health initiatives aim to change how parents think about a certain issue. In this sample, families understood the importance of a balanced diet to their health. Training and professional developing of parents to take a more proactive approach to addressing juvenile obesity would be a wise use of KSA's ample resources.

**Corresponding author:****Dr. Najya Abdullah Attia,***Assistant Professor & Consultant of Pediatric,**Department of pediatrics, king Abdulaziz Medical City, Jeddah, KSA.*

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**INTRODUCTION:**

Sedentary behavior has been associated to an increased risk of several chronic diseases and a decreased lifespan [1]. In recent decades, there has been a rise in the prevalence of childhood obesity [2]. Children who are overweight are more likely to grow up to be overweight adults, and obesity is notoriously difficult to cure. Because of these trends, WHO member countries have committed to halting the rise of childhood obesity by 2025. Farooq et al. [3] showed that the advantages of moderate-intensity physical activity for the prevention and treatment of childhood obesity decline over time. Thus, moderate-intensity physical activity should be promoted throughout infancy [4].

From birth until early adolescence, childhood consists of three stages (9–11 years old). Mental, emotional, behavioral, and social development are all reflected in these stages [5]. The World Health Organization's [6] guidelines for children under five years of age regarding physical activity, sedentary behavior, and sleep acknowledge that this age group is in the midst of rapid physical and cognitive development that is characterized by the establishment of lifelong patterns of behavior. For kids and teens between the ages of 5 and 17, the Saudi Ministry of Health produced a guideline as part of their Agility Program to clarify the basic requirements for an active lifestyle [7-10]. These guidelines emphasize the need of getting enough rest, eating well, exercising regularly, and engaging in physically active pursuits.

Since the prevalence of NCDs has skyrocketed in the 21st century, efforts have been undertaken to offer dietary guidelines, encourage health counseling, and increase consumers' personal responsibility [11]. Health officials and government officials have pointed to a number of socioeconomic variables that have contributed to the current obesity pandemic [12]. These reasons include new regulations and the ways in which the food and beverage industry processes its products. Because of their association with cancer, cardiovascular disease, and overall mortality, sodium,

added sugars, saturated fatty acids (SSF), and trans fatty acids (TFA) are the primary nutrients targeted by such policies and therapies [13,14,15,16]. Efforts have been made to reduce their presence in the food supply by increasing public awareness of the risks they represent and simplifying consumer identification of them [12].

The United Kingdom (UK) was the first to implement a salt-reduction program using a multi-component method [17]. This strategy included public education campaigns and regulatory measures impacting the food business and restaurants to bring about sustainable, doable reductions in salt levels. Contrary to the worldwide trend toward increased sodium consumption, the United Kingdom was able to cut its salt intake by 15% over a period of 7 years [17].

The Kingdom of Saudi Arabia (KSA) is located in the Eastern Mediterranean Region (EMR), which has had some of the fastest economic development in the world. Since the start of the 21st century, when disposable incomes climbed significantly, there has been a correlation between a fast dietary shift and an increase in consumption of SSF and the rise in the incidence of obesity, food allergies, and NCD [18,19,20,21]. The Kingdom of Saudi Arabia (KSA) has one of the highest rates of obesity and diabetes in the Middle East and the world, according to new data from the World Health Organization and the Global Burden of Disease (GBD). Over 65% of the population in KSA has a high body mass index (BMI), and this is the leading predictor of YLD [22-27].

Over 900,000 people every year lose their lives due to illnesses that cannot be spread by the air. The prevalence of childhood obesity has also increased, reaching over 31% [28-33]. Annually, NCDs are estimated to cost the country 19 billion USD in direct expenditures and another 13 billion USD in indirect expenses owing to lost productivity [34]. Given the alarming rates of obesity and chronic illness in the country, the Saudi Food and Drug Authority (SFDA) developed the Healthy Food Strategy (HFS) as part of

Saudi Vision 2030 [35]. The HFS, which started its launch in September of 2018, includes many dietary adjustments and public awareness efforts. This research was conducted in the Kingdom of Saudi Arabia with the aim of illuminating the level of parental knowledge on healthy lifestyle and diet for children under the age of 15 (KSA).

## **METHODS:**

### **Study design and settings**

A descriptive, correlational cross-sectional design was employed for this study. Since this study aimed to assess parents' awareness about healthy life and diet for children at a single point of measurement, this is the most appropriate design. This enables the researcher to measure the effect and the outcome at a single point of time. This study design gives reliable results with short time and less effort. The study will be conducted in KSA. Participants will be selected during the period from January to March 2023.

### **Population**

Parents of children aged 15 years or less in KSA.

### **Sampling and sample size**

Study participants were selected by non-probability convenient sampling technique. Sample size was determined according to the total number of study population with a confidence level of 95% and marginal error of 5% using Epi-Info software. Sample size is 450 participants

### **Data collection**

Data was collected using a questionnaire filled through a self-administered approach.  
Instruments

Study instrument consisted of two domains. First is sociodemographic characteristics of participants. Second is awareness assessment.

### **Statistical analysis**

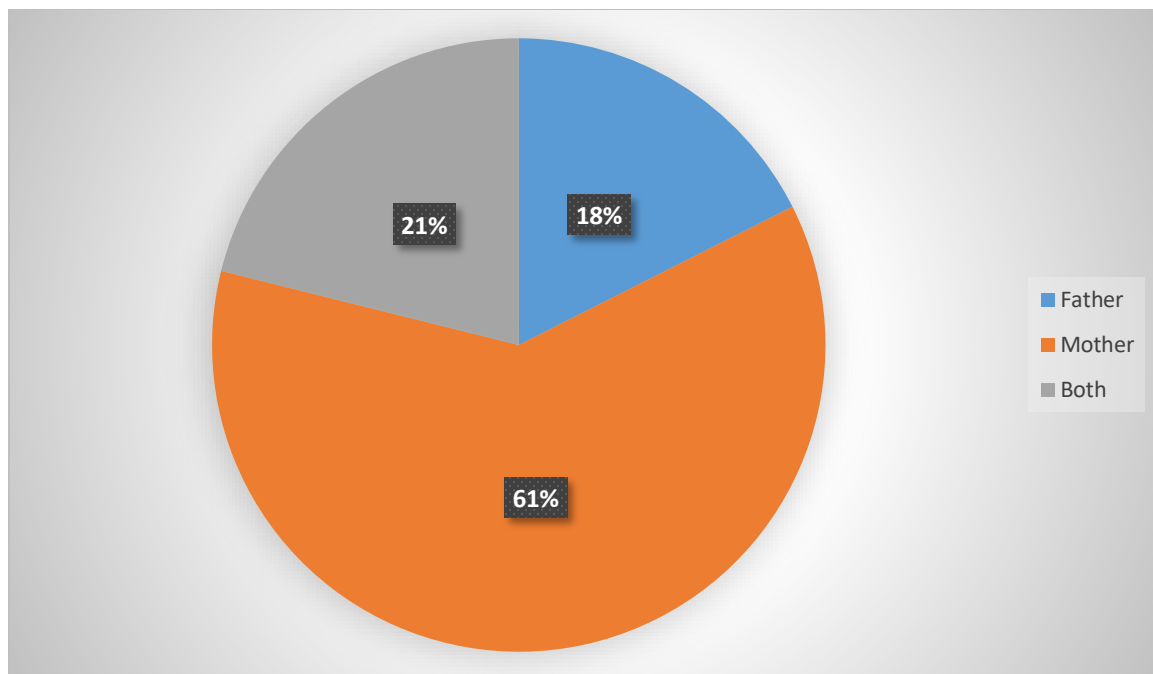
Data obtained from questionnaire were entered and analyzed using SPSS program version 23 computer software. Sociodemographic data are presented using descriptive statistics as means, median, percentages and standard deviation. Independent T test and one-way Anova are used to show statistical significance among participants characteristics. Chi square test is used to show relationship between categorical variables.

Ethical consideration

An approved permission was gained from (institution) to collect quantitative data from parents. After explanation of study objectives, participants were asked to volunteer to participate at our study. In addition, verbal informed consent was gained from participants before asking questions.

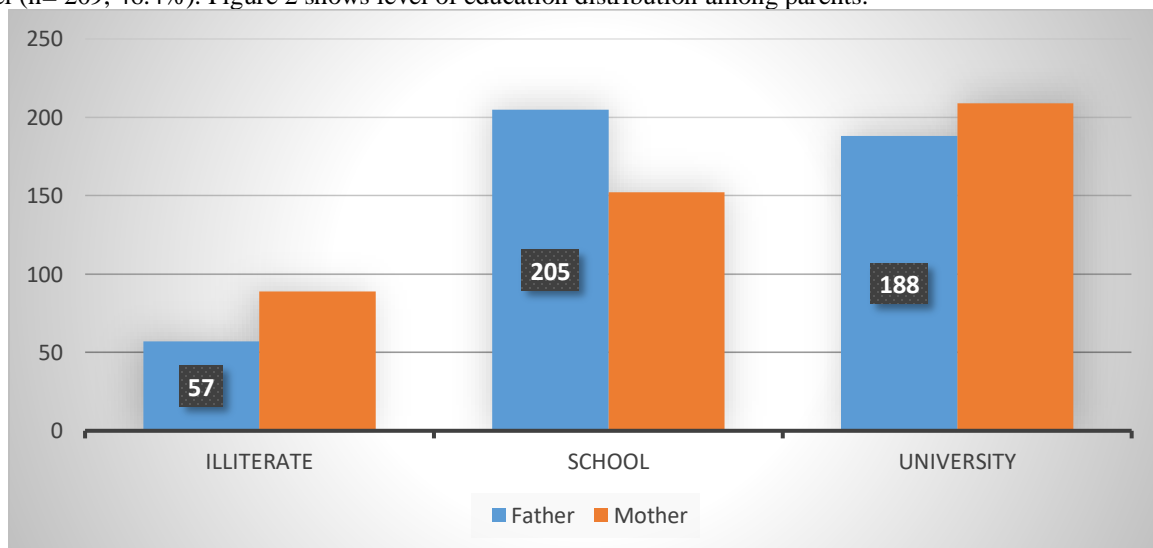
## **RESULTS:**

Study included 450 parents' interviews. The interview was with father among 79 participants (17.6%) while it was with the mother among 276 (61.3%) participants. Both parents were present in 95 interviews (21.1%) (Figure 1). The mean father age was  $35.96 \pm 5.78$  years and ranged from 23 to 47 years. On the other hand, the mean mother age was  $30.43 \pm 4.95$  and ranged from 23 to 39 years. There were 180 consanguineous parents among study participants (40%) and two thirds of participants lived in urban area ( $n = 298$ , 66.2%).



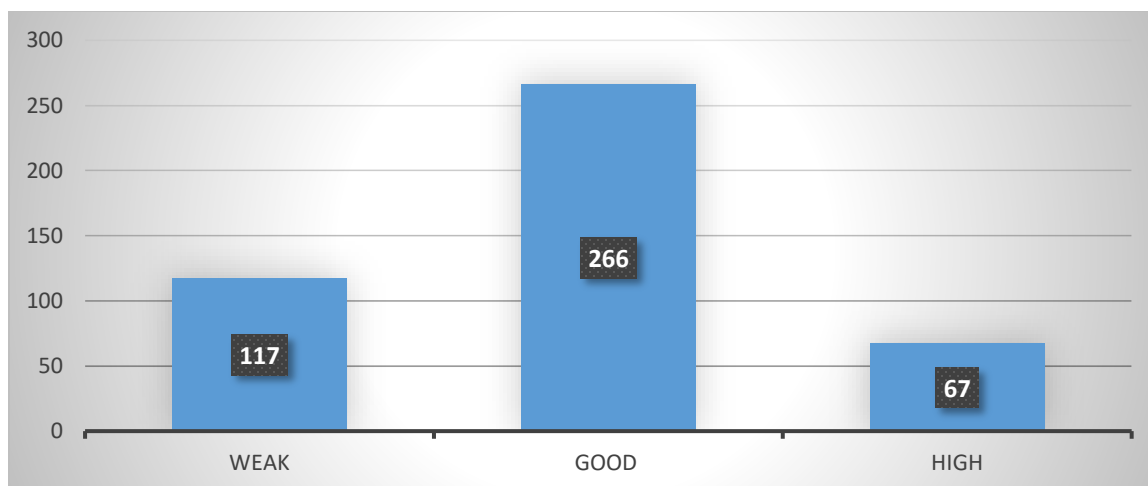
**Figure 1: Parent present at time of data collection**

The most frequent level of education among fathers was school (n= 205, 45.6%) while among mothers was university level (n= 209, 46.4%). Figure 2 shows level of education distribution among parents.



**Figure 2: Parents' level of education**

Most of participants reported having good monthly income (n= 266, 59.1%). Family income is presented in figure 3. The number of sons and daughters ranged from 1 to 9 while who was less than 15 years of age ranged from 1 to 7.



**Figure 3: Family monthly income**

Participants were asked about the frequency of certain food groups and how frequently should be given. Their answers are presented in table 1.

<b>Table 1: Participants responses to the frequency of giving food to children</b>									
Food/frequency	Never or almost never	1-3 month	1 week	2-4 week	5-6 week	1 day	2-3 day	4-6 day	>6 day
Dairy	6.4%	12.9%	5.3%	4%	4.7%	3.3%	54.7%	3.3%	5.3%
Fruit	4%	3.8%	3.8%	4%	4%	4.7%	65.8%	6.7%	3.3%
Vegetables	4%	3.8%	3.8%	4%	4%	4.7%	65.8%	6.7%	3.3%
Cereals and grains	7.8%	8%	4.7%	6%	2.7%	8.7%	6%	50.2%	6%
Meat	27.6%	18.7%	24%	29.8%	-	-	-	-	-
Fish	28.4%	17.6%	24.2%	29.8%	-	-	-	-	-
Eggs	29.6%	10.9%	15.1%	34.7%	5.3%	4.4%	-	-	-
Pulses	23.1%	18%	14.9%	28.7%	4.7%	5.3%	5.3%	-	-
Nuts	22.2%	14.2%	9.8%	38%	3.6%	2.7%	1.8%	4.4%	3.3%
Olive oil	3.3%	6.2%	5.8%	7.8%	5.8%	10.9%	17.3%	32.4%	10.4%

Highlighted cells mean correct frequency

It is notice from the table that participants had high knowledge regarding the frequency of dairy, fruit, vegetables and cereals and grains food groups and they lack knowledge regarding meat, fish, egg and nuts.

Participants were also asked about healthy food attitudes and which food groups should be eaten more and which should be eaten less. Their responses are illustrated in table 2.

<b>Table 2: Parents attitudes regarding healthy food</b>		
I try my child to eat more	Yes	No
Fruit	100%	-
Fiber	68.2%	31.8%
Vegetables	100%	-
Fish	79.3%	20.7%
I try my child to eat less	Yes	No
Butter	44%	56%
Fat	79.3%	20.7%
Meat	62.4%	37.6%
sweet	93.8%	6.2%

It is noticed from table two that most participants had good attitudes toward food groups that should be eaten more and food groups that should be eaten less. There were 11.1% of participants showed high attitude (n= 50).

Knowledge and attitude were statistically significant with higher educational level ( $P= 0.034$ ), rural residency ( $P<0.001$ ) and high family income ( $P= 0.003$ ).

**DISCUSSION:**

The pandemic of childhood obesity is a serious public health problem [36-37] due to its link with a variety of chronic and often deadly physical and mental health concerns. According to the Child Growth Standards of the World Health Organization, obese children have a weight-to-height ratio more than three standard deviations over the median between the ages of five and nineteen. More than 41 million children under the age of 5 and more than 340 million children and adolescents globally between the ages of 5 and 19 are overweight or obese [38]. Located in the Arabian Gulf, the State of Qatar consists mostly of urban and semi-urban regions, with just a minor rural population [39]. Researchers find an increase in pediatric obesity in Qatar [40]. According to World Health Organization criteria, 16% of Qatari children had an abnormally high BMI in 2006. A recent study conducted by the Ministry of Public Health in Qatar indicated that the incidence of children obesity in schools might be as high as 33 percent [40-42]. Children's obesity is impacted by several factors. Due to the country's precipitous climb to riches, many Qataris have adopted unhealthy habits, such as eating fast food [43]. Fast food, soft drinks, sugary snacks, and sugary beverages are highly advertised to children and are affordable for the majority of children to purchase. More than half of Qatari adolescents consume fast food at least twice per week [43-45], and almost all of them snack on unhealthy foods between meals [46]. The issue of overweight and obese children is aggravated by sedentary lifestyles, a lack of physical activity, contemporary comforts, and expanding urbanization [44].

There are consequences associated with the disturbingly high incidence of childhood obesity. Obesity may result in insulin resistance, type 2 diabetes mellitus (DM), cardiovascular disease, hypertension, obstructive sleep apnea, nonalcoholic steatohepatitis, musculoskeletal problems, and some cancers [47-54]. Children who are overweight are more susceptible to bullying and teasing, and as a consequence, they are more prone to suffer depression, social isolation, and low self-esteem [55-57]. Obese individuals spend an average of \$1,429 more year on medical costs than those with a normal body mass index, which adds up to a substantial amount [58]. This is only one illustration of the immense financial burden obesity causes on society [59]. Obesity affects the world GDP by around 3%, or \$2 trillion [60]. There is a relationship between permissive parenting and obesity.

Many young children and babies cry for reasons unrelated to hunger, but [26] parents may use food to calm or control behavior [61-63], and parents may provide food to a screaming infant. Through associative learning and the use of healthy meals as rewards, it is possible to affect children's food choices [64].

Both children's media exposure and their educational environments (such as kindergarten or childcare) may influence their food choices [65]. Parents primarily control the setting in which food is acquired, prepared, consumed, praised, rejected, or denied [66, 67]. A parent's feeding practices, or the "unique behavioral methods parents employ to govern what, how much, or when children eat" [68], are one of the most influential factors on their children's eating habits and patterns throughout time [68-70].

There is a relationship between how parents feed their children and whether their children establish healthy eating habits [71]. Parental feeding techniques associated with the development of healthy eating [72] include repeated exposure to nutritious and novel meals, vocal praise for healthy food selections, positive role modeling, and monitoring of highly appealing, low-nutrient items. Restricting a child's nutritional intake or snack food consumption [73], exerting pressure to eat [74], and using food as a reward or pacifier [73] are examples of non-nutritive instrumental practices associated with obesity, eating disorders, and bad eating habits. Though parents may use the latter strategies with the purpose of encouraging healthy eating or preventing weight gain, they may have unintended impacts on their children's food preferences, behavioral inhibition, and self-regulation. The ability of parents to support healthy eating and weight maintenance in their children may thus be enhanced by interventions that target particular feeding behaviors [75].

According to studies evaluating parental knowledge with and adherence to national dietary guidelines [76-80], parents have a solid understanding of what they should be feeding their children, but a far more restricted understanding of how to persuade their children to eat healthily. According to an assessment of programs designed to prevent childhood obesity, the most effective programs place a greater emphasis on the child's health than on their weight, and they include the parents as essential agents of change [81]. However, the bulk of current interventions adopt a weight-centered strategy, with a primary focus on



reducing child BMI (i.e. weight) [80, 82], without addressing possible iatrogenic effects on child body image [74].

The development of body dissatisfaction should be as important to public health as poor eating habits and childhood obesity. There is a correlation between dissatisfaction with one's physical appearance and an increased likelihood of developing eating disorders [83, 85]. These disorders include fad dieting, binge eating, and the management of emotions via food. It has been documented that discontent with one's physical appearance moderates the association between body mass index and depression [86, 87] and between overweight/obesity in teenagers and hazardous behaviors linked with the development of chronic illnesses, such as smoking [88]. Due to the harm it may do to an individual's psychological fortitude and health-related behaviors, dissatisfaction with one's physical appearance has been declared a public health concern [89, 90].

Numerous studies [91, 92] have examined the impact of parental feeding methods and eating behaviors on the development of body dissatisfaction in children. Girls whose parents restrict snack foods, for example, are more likely to have low self-esteem [93] and erroneous assessments of their athletic ability [94]. Dieting moms have been connected to lower levels of body satisfaction in daughters [95]. Girls as young as 5 or 6 years old have shown a desire to lose weight and a knowledge of diets [96, 97], suggesting that early childhood is a crucial period for intervention.

According to a recent comprehensive review of parent treatments aimed to prevent body dissatisfaction or eating disorders, there are presently no accessible therapies or evaluations for parents of children less than six years old [82]. According to the research, academics place more emphasis on therapies performed inside schools, while the role of parents is often given less weight. Because earlier studies had difficulty enrolling parents for preventive programs and had limited sample sizes, further research is required to better understand what parents need and what motivates them.

To successfully include parents in programs intended to promote healthy eating and a positive body image in children, it is necessary to first determine what parents already know and what they want to gain from participation. This research seeks to investigate parents' awareness of healthy eating and body image as a first stage in the creation of an intervention to educate parents about feeding practices that promote

healthy eating and positive body image in preschoolers. A focus group structure was used to encourage conversations amongst parent groups.

### CONCLUSION:

It is notice from the study results that participants had high knowledge regarding the frequency of dairy, fruit, vegetables and cereals and grains food groups and they lack knowledge regarding meat, fish, egg and nuts. Furthermore, most participants had good attitudes toward food groups that should be eaten more and food groups that should be eaten less. Knowledge and attitude were statistically significant with higher educational level, rural residency and high family income.

### REFERENCES:

1. Ozemek C, Lavie CJ, Rognmo Ø. Global physical activity levels—Need for intervention. *Progress in Cardiovascular Diseases*. 2019;62(2):102–7.
2. Di Cesare M, Sorić M, Bovet P, Miranda JJ, Bhutta Z, Stevens GA, et al. The epidemiological burden of obesity in childhood: a worldwide epidemic requiring urgent action. *BMC Medicine*. 2019;17(1):212.
3. Farooq A, Martin A, Janssen X, Wilson MG, Gibson A-M, Hughes A, et al. Longitudinal changes in moderate-to-vigorous-intensity physical activity in children and adolescents: A systematic review and meta-analysis. 2020;21(1):e12953.
4. Rakha AH, Abalkhail A, Albahadel DM. Family promotion of children's healthy lifestyles during the COVID-19 pandemic in light of Saudi Vision 2030. *family relations*. 2022;n/a(n/a).
5. Armstrong T. *The Human Odyssey: Navigating the Twelve Stages of Life*: Dover Publications; 2019.
6. WHO. Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age [Brochure]. World Health Organization; 2021 [cited 2022 6 Dec]. Available from: <https://www.who.int/publications-detail/guidelines-on-physical-activity-sedentary-behaviour-and-sleep-for-children-under-5-years-of-age>.
7. Saudi Ministry of Health. Initiative Agility 27 July, 2020 [cited 2022 6 Dec]. Available from: <https://www.moh.gov.sa/Ministry/Projects/agility/Pages/default.aspx>.
8. Berntsen S, Mowinckel P, Carlsen KH, Lødrup Carlsen KC, Pollestad Kolsgaard ML, Joner G, et al. Obese children playing towards an active lifestyle. *International journal of pediatric obesity*: IJPO: an official journal of the

- International Association for the Study of Obesity. 2010;5(1):64–71.
9. Duda JL. Maximizing Motivation in Sport and Physical Education Among Children and Adolescents: The Case for Greater Task Involvement. *Quest*. 1996;48(3):290–302.
  10. Kytä AM, Broberg AK, Kahila MH. Urban Environment and Children's Active Lifestyle: SoftGIS Revealing Children's Behavioral Patterns and Meaningful Places. *American Journal of Health Promotion*. 2012;26(5):e137–e48.
  11. Mozaffarian, D.; Angell, S.Y.; Lang, T.; Rivera, J.A. Role of government policy in nutrition—Barriers to and opportunities for healthier eating. *BMJ* 2018, 361.
  12. World Health Organization. Tackling NCDs: 'Best Buys' and Other Recommended Interventions for the Prevention and Control of Noncommunicable Diseases; World Health Organization: Geneva, Switzerland, 2017.
  13. Wilczek, M.M.; Olszewski, R.; Krupienicz, A. Trans-fatty acids and cardiovascular disease: Urgent need for legislation. *Cardiology* 2017, 138, 254–258.
  14. Michels, N.; Van der Meulen, K.; Huybrechts, I. Dietary Trans Fatty Acid Intake in Relation to Cancer Risk: A Systematic Review; American Society of Clinical Oncology: Alexandria, VA, USA, 2018.
  15. WHO. Healthy Diet; World Health Organization: Cairo, Egypt, 2019.
  16. WHO. Countdown to 2023: WHO Report on Global Trans-Fat Elimination 2020; World Health Organization: Geneva, Switzerland, 2020.
  17. He, F.J.; Brinsden, H.C.; MacGregor, G.A. Salt reduction in the United Kingdom: A successful experiment in public health. *J. Hum. Hypertens.* 2014, 28, 345–352.
  18. Althumiri, N.A.; Basyouni, M.H.; AlMousa, N.; AlJuwaysim, M.F.; Almubark, R.A.; BinDhim, N.F.; Alkhamaali, Z.; Alqahtani, S.A. Obesity in Saudi Arabia in 2020: Prevalence, Distribution, and Its Current Association with Various Health Conditions. *Healthcare* 2021, 9, 311.
  19. Althumiri, N.A.; Basyouni, M.H.; AlMousa, N.; AlJuwaysim, M.F.; BinDhim, N.F.; Alqahtani, S.A. Prevalence of Self-Reported Food Allergies and Their Association with Other Health Conditions among Adults in Saudi Arabia. *Int. J. Environ. Res. Public Health* 2021, 18, 347.
  20. Gelhorn, H.L.; Boye, K.S.; Shalhoub, H.; Matza, L.S.; Jordan, J.B.; Alhammad, A.; Anand, S.B.; Ekhzaimy, A.A.; Strizek, A. Patient-Reported Outcomes and Impact of Type 2 Diabetes: A Cross-Sectional Study in the Kingdom of Saudi Arabia. *Patient Prefer. Adherence* 2020, 14, 2231–2242.
  21. Moradi-Lakeh, M.; El Bcheraoui, C.; Afshin, A.; Daoud, F.; AlMazroa, M.A.; Al Saeedi, M.; Basulaiman, M.; Memish, Z.A.; Al Rabeeah, A.A.; Mokdad, A.H. Diet in Saudi Arabia: Findings from a nationally representative survey. *Public Health Nutr.* 2017, 20, 1075–1081.
  22. Tyrovolas, S.; El Bcheraoui, C.; Alghnam, S.A.; Alhabib, K.F.; Almadi, M.A.H.; Al-Raddadi, R.M.; Bedi, N.; El Tantawi, M.; Krish, V.S.; Memish, Z.A. The burden of disease in Saudi Arabia 1990–2017: Results from the Global Burden of Disease Study 2017. *Lancet Planet. Health* 2020, 4, e195–e208.
  23. WHO. Saudi Arabia: Country Profile; World Health Organization: Geneva, Switzerland, 2018.
  24. Al-Raddadi, R.; Bahijri, S.M.; Jambi, H.A.; Ferns, G.; Tuomilehto, J. The prevalence of obesity and overweight, associated demographic and lifestyle factors, and health status in the adult population of Jeddah, Saudi Arabia. *Ther. Adv. Chronic Dis.* 2019, 10.
  25. Wang, Y.-J.; Yeh, T.-L.; Shih, M.-C.; Tu, Y.-K.; Chien, K.-L. Dietary sodium intake and risk of cardiovascular disease: A systematic review and dose-response meta-analysis. *Nutrients* 2020, 12, 2934.
  26. Malik, V.S.; Li, Y.; Pan, A.; De Koning, L.; Schernhammer, E.; Willett, W.C.; Hu, F.B. Long-term consumption of sugar-sweetened and artificially sweetened beverages and risk of mortality in US adults. *Circulation* 2019, 139, 2113–2125.
  27. Ministry of Health (Ed.) World Health Survey Saudi Arabia; Ministry of Health: Riyadh, Saudi Arabia, 2021.
  28. Ataey, A.; Jafarvand, E.; Adham, D.; Moradi-Asl, E. The Relationship between Obesity, Overweight, and the Human Development Index in World Health Organization Eastern Mediterranean Region Countries. *J. Prev. Med. Public Health* 2020, 53, 98–105.
  29. World Health Organization Regional Office for the Eastern Mediterranean; Alwan, A.; McColl, K.; Al-Jawaldeh, A. Proposed Policy Priorities for Preventing Obesity and Diabetes in the Eastern Mediterranean Region; World Health Organization, Regional Office for the Eastern Mediterranean: Cairo, Egypt, 2017.
  30. El Mouzan, M.I.; Foster, P.J.; Al Herbish, A.S.; Al Salloum, A.A.; Al Omer, A.A.; Qurachi, M.M.; Kecojevic, T. Prevalence of overweight and



- obesity in Saudi children and adolescents. *Ann. Saudi Med.* 2010, 30, 203–208.
31. Al-Hussaini, A.; Bashir, M.S.; Khormi, M.; AlTuraiki, M.; Alkhamis, W.; Alrajhi, M.; Halal, T. Overweight and obesity among Saudi children and adolescents: Where do we stand today? *Saudi J. Gastroenterol. Off. J. Saudi Gastroenterol. Assoc.* 2019, 25, 229–235.
  32. Aljaadi, A.; Alharbi, M. *Overweight and Obesity Among Saudi Children: Prevalence, Lifestyle Factors, and Health Impacts*; Springer: Cham, Switzerland, 2020.
  33. Al-Qahtani, A.M. Prevalence and Predictors of Obesity and Overweight among Adults Visiting Primary Care Settings in the Southwestern Region, Saudi Arabia. *Biomed. Res. Int.* 2019, 2019, 8073057.
  34. World Health Organization; United Nations Development Programme. *The Investment Case for Noncommunicable Disease Prevention and Control in Mongolia: Return on Investment Analysis and Institutional Context Analysis*; World Health Organization: Geneva, Switzerland, 2017.
  35. Saudi Food and Drug Authority. *SFDA Launches Healthy Food Regulation Strategy Tomorrow*. Available online: <https://old.sfda.gov.sa/en/food/news/Page/s/f11-9-2018a1.aspx#:~:text=SFDA%20will%20sign%20agreements%20for,and%20fat%20in%20their%20products> (accessed on 6 Dec 2022).
  36. Hill AJ. The psychosocial consequences of childhood obesity. *Psychologist.* 2005;18:280–3.
  37. Baker JL, Olsen LW, Sørensen TIA. Childhood body-mass index and the risk of coronary heart disease in adulthood. *New Eng J Med.* 2007;357:2229–37.
  38. World Health Organization. *Obesity and overweight*. [Last accessed on 2022 Dec 6]. Available from: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>.
  39. Global Strategy on Diet, Physical Activity and Health. WHO; [Last accessed on 2022 Dec 6]. Available from: <https://www.who.int/dietphysicalactivity/childhood/en/> [Google Scholar]
  40. Bener A, Kamal AA. Growth patterns of Qatari school children and adolescents aged 6-18 years. *J Health Popul Nutr.* 2005;23:250–8.
  41. Qatar world health survey. 2006. [Last accessed on 2022 Dec 6]. Available from: <http://qatarhealth.files.wordpress.com/2010/06/whs-qatar-findings.ppt>.
  42. Ministry of Public Health, Qatar. *Healthy lifestyle*. [Last accessed on 2022 Dec 6]. Available from: <https://phsmophgovqa/data/healthy-lifestyle/>
  43. Kerkadi A, Hassan AS, Yousef AEM. High prevalence of the risk of overweight and overweight among Qatari children ages 9 through 11. *Nutr Food Sci.* 2009;39:36–45.
  44. Bener A, Al-Mahdi HS, Ali AI, Al-Nufal M, Vachhani PJ, Tewfik I. Obesity and low vision as a result of excessive internet use and television viewing. *Int J Food Sci Nutr.* 2011;62:60–2.
  45. Bagchi K. Nutrition in the Eastern Mediterranean Region of the World Health Organization. *East Mediterr Health J.* 2008;14(Suppl):S107–13.
  46. Al-Naqeeb B. The role of parents and schools in preventing childhood obesity. *UCQ Nurs J Acad Writ.* 2010;2010:37–44.
  47. Qotba H, Al-Isa AN. Anthropometric measurements and dietary habits of schoolchildren in Qatar. *Int J Food Sci Nutr.* 2007;58:1–5.
  48. Kelishadi R. Childhood overweight, obesity, and the metabolic syndrome in developing countries. *Epidemiol Rev.* 2007;29:62–76.
  49. Bener A. Prevalence of obesity, overweight, and underweight in Qatari adolescents. *Food Nutr Bull.* 2006;27:39–45.
  50. Ng SW, Zaghloul S, Ali HI, Harrison G, Popkin BM. The prevalence and trends of overweight, obesity and nutrition-related non-communicable diseases in the Arabian Gulf States. *Obes Rev.* 2011;12:1–13.
  51. Rizk NM, Yousef M. Association of lipid profile and waist circumference as cardiovascular risk factors for overweight and obesity among school children in Qatar. *Diabetes Metab Syndr Obes.* 2012;5:425–32.
  52. Rizk N, Amin M, Yousef M. A pilot study on metabolic syndrome and its associated features among Qatari school children. *Int J Gen Med.* 2011;4:521–5.
  53. Biro FM, Wien M. Childhood obesity and adult morbidities. *Am J Clin Nutr.* 2010;91:1499S–505S.
  54. Wolin KY, Carson K, Colditz GA. Obesity and cancer. *Oncologist.* 2010;15:556–65.
  55. Haflon NH, Larson K, Slusser W. Associations between obesity and comorbid mental health, developmental and physical health conditions in a nationally representative sample of US children aged 10 to 17. *Acad Pediatr.* 2013;13:6–13.
  56. van Geel M, Vedder P, Tanilon J. Are overweight and obese youths more often bullied by their

- peers? A meta-analysis on the correlation between weight status and bullying. *Int J Obes (Lond)* 2014;38:1263–7.
57. Griffiths LI, Parsons TJ, Hill AJ. Self-esteem and quality of life in obese children and adolescents: A systematic review. *Int J Pediatr Obes*. 2010;5:282–304.
  58. National Institutes of Health. What are the Health Risks of Overweight and Obesity. 2012. [Last accessed on 2022 Dec 6]. Available from: [www.nhlbi.nih.gov/health/health-topics/topics/obe/risks](http://www.nhlbi.nih.gov/health/health-topics/topics/obe/risks).
  59. Finkelstein EA, Trogdon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: Payer- and service-specific estimates. *Health Aff (Millwood)* 2009;28:w822–31.
  60. McKinsey Global Institute. Overcoming Obesity: An Initial Economic Analysis. 2014. [Last accessed on 2022 Dec 6]. Available from: <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/how-the-world-could-better-fight-obesity>.
  61. Olvera N, Power TG. Brief report: Parenting styles and obesity in Mexican American children: A longitudinal study. *J Pediatr Psychol*. 2010;35:243–9.
  62. Stifter CA, Anzman-Frasca S, Birch LL, Voegtline K. Parent use of food to soothe infant/toddler distress and child weight status. An exploratory study. *Appetite*. 2011;57:693–9.
  63. Moding KJ, Birch L, Stifter CA. Infant temperament and feeding history predict infants' responses to novel foods. *Appetite*. 2014;83:218–25.
  64. DeCosta P, Møller P, Frøst MB, Olsen A. Changing children's eating behaviour-A review of experimental research. *Appetite*. 2017;113:327–57.
  65. Dixon HG, Scully ML, Wakefield MA, White VM, Crawford DA. The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences. *Soc Sci Med*. 2007;65(7):1311–23.
  66. Mitchell GL, Farrow CV, Haycraft E, Meyer C. Parental influences on children's eating behaviour and characteristics of successful parent-focussed interventions. *Appetite*. 2013;60:85–94.
  67. Nowicka P, Flodmark C. Family in pediatric obesity management: a literature review. *Int J Pediatr Obes*. 2008;3(S1):44–50.
  68. Whear R, Axford N. "Finish what's on your plate!": the relationships between parenting, children's nutrition and outcomes. *Child Care Pract*. 2009;15(2):145–59.
  69. Khandpur N, Blaine RE, Fisher JO, Davison KK. Fathers' child feeding practices: a review of the evidence. *Appetite*. 2014;78:110–21.
  70. Kiefner-Burmeister AE, Hoffmann DA, Meers MR, Koball AM, Musher-Eizenman DR. Food consumption by young children: a function of parental feeding goals and practices. *Appetite*. 2014;74:6–11.
  71. Ventura AK, Birch LL. Does parenting affect children's eating and weight status? *Int J Behav Nutr Phys Act*. 2008;5(15):1–12.
  72. Fisher JO, Sinton MM, Birch LL. Early parental influence and risk for the emergence of disordered eating. In: Smolak L, Thompson JK, editors. *Body Image, Eating Disorders and Obesity in Youth: Assessment, Prevention and Treatment*. 2nd ed. Washington D.C.: American Psychological Association; 2009. p. 17–33.
  73. Gibson EL, Kreichauf S, Wildgruber A, Vögele C, Summerbell CD, Nixon C, et al. A narrative review of psychological and educational strategies applied to young children's eating behaviours aimed at reducing obesity risk. *Obes Rev*. 2012;13:85–95.
  74. Clark HR, Goyder E, Bissell P, Blank L, Peters J. How do parents' child-feeding behaviours influence child weight? Implications for childhood obesity policy. *J Public Health*. 2007;29(2):132–41.
  75. Gregory JE, Paxton SJ, Brozovic AM. Maternal feeding practices, child eating behaviour and body mass index in preschool-aged children: a prospective analysis. *Int J Behav Nutr Phys Activity*. 2010;7:55.
  76. Savage JS, Fisher JO, Birch LL. Parental influence on eating behavior: conception to adolescence. *J Law Med Ethics*. 2007;35(1):22–34.
  77. Cluss PA, Ewing L, King WC, Reis EC, Dodd JL, Penner B. Nutrition knowledge of low-income parents of obese children. *Behav Med Pract Policy Res*. 2013;3(2):218–25.
  78. Variyam JN, Blaylock J, Lin B, Ralston K, Smallwood D. Mother's nutrition knowledge and children's dietary intakes. *Am J Agric Econ*. 1999;81(2):373–84.
  79. Variyam JN. Overweight children: Is parental nutrition knowledge a factor? *Food Review*. 2001;24(2):18–22.
  80. Schwartz C, Scholtens P, Lalanne A, Weenen H, Nicklaus S. Development of healthy eating habits early in life: review of recent evidence and selected guidelines. *Appetite*. 2011;57(3):796–807.

81. Golan M, Crow S. Parents are key players in the prevention and treatment of weight-related problems. *Nutr Rev.* 2004;62(1):39–50.
82. Hart LM, Cornell C, Damiano SR, Paxton SJ. Parents and prevention: a systematic review of interventions involving parents that aim to prevent body dissatisfaction or eating disorders. *Int J Eat Disord.* 2015;48(2):157–69.
83. Paxton SJ, Neumark-Sztainer D, Hannan PJ, Eisenberg M. Body dissatisfaction prospectively predicts depressive symptoms and low self-esteem in adolescent girls and boys. *J Clin Child Adolesc Psychol.* 2006;35(4):539–49.
84. Neumark-Sztainer D, Paxton SJ, Hannan PJ, Haines J, Story M. Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *J Adolesc Health.* 2006;39(2):244–51.
85. Stice E, Shaw HE. Role of body dissatisfaction in the onset and maintenance of eating pathology: a synthesis of research findings. *J Psychosom Res.* 2002;53(5):985–93.
86. Mond JM, van den Berg P, Boutelle K, Hannan P, Neumark-Sztainer D. Obesity, body dissatisfaction, and emotional well-being in early and late adolescence: Findings from the Project EAT study. *J Adolesc Health.* 2011;48(4):373–8.
87. Wertheim EH, Koerner J, Paxton SJ. Longitudinal predictors of restrictive eating and bulimic tendencies in three different age groups of adolescent girls. *J Youth Adolesc.* 2001;30(1):69–81.
88. Farhat T, Iannotti RJ, Caccavale LJ. Adolescent overweight, obesity and chronic disease-related health practices: mediation by body image. *Obesity Facts.* 2014;7(1):1–14.
89. Bucchianeri MM, Neumark-Sztainer D. Body dissatisfaction: an overlooked public health concern. *J Public Mental Health.* 2014;13(2):64–9.
90. Paxton SJ. Body image dissatisfaction, extreme weight loss behaviours: suitable targets for public health concerns? *Health Promot J Austr.* 2000;10(1):15–9.
91. Brown R, Ogden J. Children's eating attitudes and behaviour: a study of the modelling and control theories of parental influence. *Health Educ Res.* 2004;19(3):261–71.
92. Agras W, Bryson S, Hammer LD, Kraemer HC. Childhood risk factors for thin body preoccupation and social pressure to be thin. *J Am Acad Child Adolesc Psychiatry.* 2007;46(2):171–8.
93. Fisher JO, Birch LL. Parents' restrictive feeding practices are associated with young girls' negative self-evaluation of eating. *J Am Diet Assoc.* 2000;100(11):1341–6.
94. Davison KK, Birch LL. Weight status, parent reaction, and self-concept in five-year-old girls. *Pediatrics.* 2001;107(1):46–53.
95. Neumark-Sztainer D, Bauer KW, Friend S, Hannan PJ, Story M, Berge JM. Family weight talk and dieting: how much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *J Adolesc Health.* 2010;47(3):270–6.
96. Lowes J, Tiggeman M. Body dissatisfaction, dieting awareness and the impact of parental influence on young children. *Br J Health Psychol.* 2003;8(2):135–47.
97. Spiel EC, Paxton SJ, Yager Z. Weight attitudes in 3- to 5-year-old children: age differences and cross-sectional predictors. *Body Image.* 2012;9(4):524–7.