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Awareness of Childhood Obesity among Parents in Alahsa, Saudi Arabia

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Abstract **Original Research Article**

Background: Childhood obesity is a growing public health concern in Saudi Arabia, driven by shifting dietary patterns, sedentary lifestyles, and limited parental awareness. Parents play a central role in shaping children's dietary and physical activity habits, yet many fails to accurately recognize excess weight in their children, delaying early intervention. ***Objectives:*** This study aimed to assess parental awareness and perceptions of childhood obesity in Al-Ahsa, Saudi Arabia. ***Methods:*** A cross-sectional descriptive study was conducted among 384 parents of children aged 6 to 17 years in Al-Ahsa, Eastern Province, Saudi Arabia, between August 2025 and May 2026. Data were collected using a structured, self-administered, bilingual questionnaire distributed electronically via Google Forms. The questionnaire covered parental sociodemographics, child anthropometric data, parental weight perception, dietary and physical activity behaviors, obesity-related awareness, and willingness to change lifestyle. ***Results:*** About 40% of children were classified as overweight or obese. Many parents misperceived their child's weight as normal despite BMI findings, and overall concern about child weight was generally low. Higher parental awareness of obesity-related health risks was significantly associated with older age and higher educational level ($p = 0.001$), but not with the child's BMI status. Key independent predictors of childhood overweight and obesity included frequent sugary drink consumption (OR = 25.33), inadequate fruit intake (OR = 18.10), limited physical activity (OR = 4.25), excessive screen time (OR = 5.57), and inadequate vegetable intake (OR = 4.27). Conversely, access to safe play areas reduced the likelihood of overweight and obesity by nearly half (OR = 0.52). ***Conclusion:*** Childhood overweight and obesity are highly prevalent in Al-Ahsa, with dietary habits, physical inactivity, screen time, and parental educational level as the strongest predictors. Parental weight misperception and limited awareness reflect the need for culturally sensitive educational programs.

Keywords: Childhood obesity; parental awareness; weight perception; dietary habits; physical activity; Saudi Arabia; Al-Ahsa; BMI.

INTRODUCTION

Childhood obesity is one of the most pressing public health challenges of the twenty-first century, with the World Health Organization reporting that over 340 million children and adolescents aged 5 to 19 years were affected by overweight or obesity globally, reflecting a dramatic increase over recent decades [World Health Organization [WHO], 2021; Abarca-Gómez *et al.,* 2017]. Beyond its immediate physical consequences, including type 2 diabetes, hypertension, dyslipidemia, and obstructive sleep apnea, childhood obesity is strongly associated with psychological difficulties such as depression and low self-esteem, and significantly increases the risk of adult obesity and related chronic diseases [Griffiths *et al.,* 2010; Sahoo *et al.,* 2015; Simmonds *et al.,* 2016].In Saudi Arabia, rapid urbanization, dietary shifts toward energy-dense foods, increased sedentary behaviors, and prolonged screen time have contributed to alarming rates of childhood overweight and obesity, with regional studies reporting prevalence figures of up to 30% or more among school-aged children [Al-Hussaini *et al.,* 2019; Al-Rukban, 2003; Memish *et al.,* 2014].

Parental awareness and perception are considered factors for this health challenge. Parents serve as the primary modulators of their children's dietary and lifestyle habits. Research consistently shows that a considerable proportion fail to accurately recognize excess weight in their children, a phenomenon known as weight misperception [Epstein *et al.,* 2023; Golan & Crow, 2004]. Parents who do not perceive their child's weight as problematic are less likely to seek medical

advice or implement behavioral changes [Costa A, 2022]. These misperceptions are further affected by cultural norms in Arab societies that associate a larger body size in children with good health [Wang J *et al.,* 2025; Musaiger A *et al.,* 2011]. Moreover, parental behaviors, including feeding practices, promotion of physical activity, screen time regulation, and frequency of shared family meals, have all been shown to directly influence children's weight outcomes [Birch L *et al.,* 2009; Sleddens E *et al.,* 2011; Hammons AJ and Fiese BH, 2011].

Despite growing global evidence, research on parental awareness and its relationship to childhood obesity remains limited at the regional level in Saudi Arabia. This study, therefore, aims to assess parental awareness and perceptions of childhood obesity, evaluate the influence of parental behaviors on children's dietary and physical activity habits, and identify key predictors of overweight and obesity among children in Al-Ahsa, Saudi Arabia.

SUBJECTS AND METHODS

This cross-sectional descriptive study was conducted among parents of children aged 6 to 17 years in Al-Ahsa, Eastern Province, Saudi Arabia, between August 2025 and May 2026. Parents were eligible if they could read Arabic or English and provided informed consent, while those with children having weight-affecting chronic conditions or non-residents during data collection were excluded. The sample size of 383 participants was determined using the Cochran formula, assuming a 95% confidence level, 5% margin of error, and 50% response distribution from a reference population of 105,447. Participants were recruited through random sampling, with the questionnaire distributed electronically via Google Forms through mobile phones to ensure broad accessibility.

Data were collected using a structured, self-administered questionnaire adapted from previously validated instruments and customized to the local context, available in both Arabic and English. The questionnaire covered parental sociodemographics, child information, parental weight perception, dietary and physical activity behaviors, obesity-related awareness, and willingness to change lifestyle. A pilot study (N = 20) was conducted to evaluate the validity and reliability of the parental childhood obesity awareness questionnaire. Content validity, assessed by a panel of three experts, showed a Scale-Content Validity Index (S-CVI/Ave) of 1.00. The overall questionnaire had good internal consistency (Cronbach's $\alpha = 0.89$), with subscale alphas ranging from 0.71 to 0.86. Test-retest reliability over a two-week interval showed an intraclass correlation coefficient (ICC) of 0.85 for the overall scale (95% CI: 0.71 - 0.93), representing excellent temporal stability. Child BMI was calculated from parental-reported height and weight and classified according to CDC age- and sex-specific BMI-for-age percentile references into underweight, normal weight, overweight, and obese categories [17]. Ethical approval was obtained from the Institutional Review Board of King Abdullah Hospital, Al-Ahsa, and all responses were collected anonymously with electronic informed consent.

Data Management and Analysis

All statistical analyses were performed using IBM SPSS Statistics, version 28 (IBM Corp., Armonk, NY, USA). Data were first screened for completeness and accuracy before analysis. Descriptive statistics were used to summarize the sociodemographic and anthropometric characteristics of the study participants. Continuous variables, including child height, weight, and body mass index (BMI), were expressed as means and standard deviations, while categorical variables were presented as frequencies and percentages. To examine associations between categorical variables, the Pearson Chi-square test was applied. Where cell frequencies were small or expected counts were below five, Fisher's Exact test was used as an alternative. A p-value of less than 0.05 was considered statistically significant throughout all analyses.

To identify independent predictors of childhood overweight and obesity, binary logistic regression analysis was conducted. The outcome variable was dichotomized as overweight or obese versus normal weight or underweight. Predictor variables included child gender, parental educational level, dietary habits such as fruit, vegetable, and sugary drink consumption, physical activity duration, daily screen time, access to safe play areas, and frequency of family meals. Results were expressed as adjusted odds ratios (ORa) with their corresponding 95% confidence intervals (CI). Variables were entered into the model simultaneously, and reference categories were defined for each predictor before analysis.

RESULTS

The study included 384 participants (Table 1). Mothers represented most respondents (69.5%), while fathers accounted for 29.7%. The most common parental age group was 35-44 years (41.9%), and nearly half of the participants held a Bachelor's degree (47.7%). Children were almost equally distributed by gender, with most aged between 6-13 years. The mean height, weight, and BMI of children were 146.27 ± 16.77 cm, 52.60 ± 17.22 kg, and 24.23 ± 5.25, respectively. Regarding BMI categories, 50.8% of children had normal weight, whereas 21.6% were overweight and 19.0% were obese.

Regarding parental perception of child weight status (Table 2), more than half of parents perceived their child as having normal weight (55.7%), while 24.2% considered their child overweight and 11.5% obese. Slight concern regarding child weight was the most frequently reported level of concern (32.0%), followed

by equal proportions of parents reporting no concern or moderate concern (24.5% each). Most parents expressed willingness to implement lifestyle changes for their child (74.5%).

In Table 3, the majority of children consumed 1-2 daily servings of fruits (55.2%) and vegetables (56.3%), whereas only a small proportion consumed 5 or more servings. Sugary drinks were commonly consumed 1-3 times weekly (43.0%), and 26.0% consumed them four or more times weekly. Nearly half of children engaged in 30-60 minutes of daily physical activity, while one-third performed less than 30 minutes daily. Screen time exceeded 2 hours per day in 46.9% of children. Most parents reported always or sometimes encouraging physical activity, and 70.3% indicated the availability of safe play areas near their homes. Daily family meals were reported by 56.8% of families.

Considering factors associated with parental awareness of obesity hazards (Table 4), significant associations were observed with parental age and educational level ($p = 0.001$ for both). Awareness was highest among younger parents and those with Bachelor's or postgraduate degrees, while parents with secondary education or below showed the lowest awareness levels. No statistically significant associations were found between awareness and child gender, age, or BMI category.

In Table 5, parental perception of child weight, concern about weight, and willingness to change lifestyle were not significantly associated with awareness of obesity hazards. However, awareness was significantly associated with encouragement of physical activity ($p = 0.049$) and frequency of family meals ($p = 0.048$). Parents who were aware of obesity hazards generally reported healthier, supportive behaviors within the family environment.

Logistic regression analysis identified several significant predictors of childhood overweight/obesity. Parents with secondary education or below had higher odds of having overweight or obese children (OR = 1.72, $p = .046$), while postgraduate degree holders proved even higher odds (OR = 3.84, $p < .001$) compared with Bachelor's degree holders. Children who consumed no fruit daily had markedly increased odds of overweight/obesity (OR = 18.10, $p < .001$), and consuming sugary drinks four or more times weekly was also strongly associated with overweight/obesity (OR = 25.33, $p < .001$). In addition, children performing less than 30 minutes of daily physical activity had over fourfold higher odds of overweight/obesity (OR = 4.25, $p < .001$), while screen time exceeding 2 hours daily increased the odds more than fivefold (OR = 5.57, $p < .001$). Conversely, access to safe play areas was associated with lower odds of overweight/obesity (OR = 0.52, $p = .005$).

Table 1: Sociodemographic and Anthropometric Characteristics of Study Participants and Their Children, Al-Ahsa, Saudi Arabia (N=384)

Variable	n (%)
Responder	
Father	114 (29.7%)
Mother	267 (69.5%)
Other	3 (0.8%)
Parent age	
18–24	22 (5.7%)
25–34	108 (28.1%)
35–44	161 (41.9%)
45–54	74 (19.3%)
55–64	15 (3.9%)
65 or older	4 (1.0%)
Educational Level	
Secondary / below	81 (21.1%)
Bachelor’s degree	183 (47.7%)
Diploma / Technical	74 (19.3%)
Postgraduate (Master/PhD)	46 (12.0%)
Child gender	
Male	190 (49.5%)
Female	194 (50.5%)
Child age (years)	
6–9	138 (35.9%)
10–13	135 (35.2%)
14–17	111 (28.9%)
Child height (cm)	

Mean ± SD	146.27 ± 16.77
Child weight (kg)	
Mean ± SD	52.60 ± 17.22
BMI	
Mean ± SD	24.23 ± 5.25
Child BMI category	
Underweight	33 (8.6%)
Normal weight	195 (50.8%)
Overweight	83 (21.6%)
Obese	73 (19.0%)

Table 2: Parental Perception of Child's Weight Status and Willingness to Change Lifestyle Among Parents in Al-Ahsa, Saudi Arabia (N=384)

Items	n (%)
Parent perception of weight	
Underweight	33 (8.6%)
Normal weight	214 (55.7%)
Overweight	93 (24.2%)
Obese	44 (11.5%)
Parent's concern about weight	
Not concerned	94 (24.5%)
Slightly concerned	123 (32.0%)
Moderately concerned	94 (24.5%)
Very concerned	73 (19.0%)
Willingness to Change Lifestyle	
Yes	286 (74.5%)
Maybe	81 (21.1%)
No	17 (4.4%)

Table 3: Parental Report of Child's Eating Habits, Physical Activity Patterns, and Family Environmental Factors Among Parents in Al-Ahsa, Saudi Arabia (N=384)

Domain	Item	n (%)
Child's Eating Habits	**How many servings of fruits per day**	
	None	45 (11.7%)
	1–2 servings	212 (55.2%)
	3–4 servings	116 (30.2%)
	5 or more servings	11 (2.9%)
	How many servings of vegetables per day	
	None	39 (10.2%)
	1–2 servings	216 (56.3%)
	3–4 servings	107 (27.9%)
	5 or more servings	22 (5.7%)
	Sugary drink consumption frequency	
	Never	23 (6.0%)
	Less than once a week	96 (25.0%)
	1–3 times per week	165 (43.0%)
	4 or more times per week	100 (26.0%)
Child's Physical Activity	**Daily active play / physical exercise**	
	Less than 30 min	127 (33.1%)
	30–60 min	186 (48.4%)
	More than 60 min	71 (18.5%)
	Daily screen time	
	Less than 1 hour	31 (8.1%)
	1–2 hours	173 (45.1%)
	More than 2 hours	180 (46.9%)
Family and Environmental Factors	**Encouraging physical activity**	
	Never	8 (2.1%)

	Rarely	34 (8.9%)
	Sometimes	184 (47.9%)
	Always	158 (41.1%)
	Safe & accessible play areas nearby	
	Yes	270 (70.3%)
	No	114 (29.7%)
	Family meals together	
	Never	11 (2.9%)
	Rarely	20 (5.2%)
	Several times a week	135 (35.2%)
	Every day	218 (56.8%)

Table 4: Association Between Sociodemographic Characteristics and Parental Awareness of Obesity Hazards Among Parents in Al-Ahsa, Saudi Arabia

Variable	Parents Awareness of obesity hazards		p-value
	Aware n (%)	Not aware n (%)	
Parent age			.001*^
18–24	19 (86.4%)	3 (13.6%)	
25–34	70 (64.8%)	38 (35.2%)	
35–44	116 (72.0%)	45 (28.0%)	
45–54	34 (45.9%)	40 (54.1%)	
55–64	4 (26.7%)	11 (73.3%)	
65 or older	3 (75.0%)	1 (25.0%)	
Educational level			.001*
Secondary / below	31 (38.3%)	50 (61.7%)	
Bachelor's degree	139 (76.0%)	44 (24.0%)	
Diploma / Technical	42 (56.8%)	32 (43.2%)	
Postgraduate (Master/PhD)	34 (73.9%)	12 (26.1%)	
Child gender			.632
Male	126 (66.3%)	64 (33.7%)	
Female	120 (61.9%)	74 (38.1%)	
Child age (years)			.163
6–9	94 (68.1%)	44 (31.9%)	
10–13	78 (57.8%)	57 (42.2%)	
14–17	74 (66.7%)	37 (33.3%)	
Child BMI			.944
Underweight	20 (60.6%)	13 (39.4%)	
Normal weight	125 (64.1%)	70 (35.9%)	
Overweight	55 (66.3%)	28 (33.7%)	

P: Pearson X^2 test ^: Exact probability test
** P < 0.05 (significant)*

Table 5: Association Between Parental Perceptions, Family support, and Awareness of Obesity Hazards Among Parents in Al-Ahsa, Saudi Arabia

Variable	Parents Awareness of obesity hazards		p-value
	Aware n (%)	Not aware n (%)	
Parent perception of weight			.703
Underweight	19 (7.7%)	14 (10.1%)	
Normal weight	140 (56.9%)	74 (53.6%)	
Overweight	57 (23.2%)	36 (26.1%)	
Obese	30 (12.2%)	14 (10.1%)	
Parent concern about weight			.270
Not concerned	58 (23.6%)	36 (26.1%)	
Slightly concerned	81 (32.9%)	42 (30.4%)	
Moderately concerned	66 (26.8%)	28 (20.3%)	

Very concerned	41 (16.7%)	32 (23.2%)	
Willingness to change lifestyle			.618^
Yes	185 (75.2%)	101 (73.2%)	
Maybe	52 (21.1%)	29 (21.0%)	
No	9 (3.7%)	8 (5.8%)	
Encouraging physical activity			.049*^
Never	3 (1.2%)	5 (3.6%)	
Rarely	27 (11.0%)	7 (5.1%)	
Sometimes	117 (47.6%)	67 (48.6%)	
Always	99 (40.2%)	59 (42.8%)	
Family meals together			.048*^
Never	4 (1.6%)	7 (5.1%)	
Rarely	16 (6.5%)	4 (2.9%)	
Several times a week	89 (36.2%)	46 (33.3%)	
Every day	137 (55.7%)	81 (58.7%)	

P: Pearson X^2 test ^: Exact probability test
** P < 0.05 (significant)*

Table 6: Adjusted binary logistic regression for predictors of overweight/obesity among children, Al-Ahsa, Saudi Arabia

Variable	**OR_A**	**95% CI**	**p-value**
Child gender			
Female (ref)	1		
Male	1.29	0.85 – 1.93	0.227
Parental educational level			
Bachelor's degree (ref)	1		
Secondary / below	1.72	1.01 – 2.94	.046*
Diploma / Technical	1.32	0.75 – 2.31	0.329
Postgraduate (Master/PhD)	3.84	1.95 – 7.59	<.001*
Fruit servings per day			
3–4 servings (ref)	1		
None	18.1	7.58 – 43.19	<.001*
1–2 servings	3.96	2.30 – 6.83	<.001*
5 or more servings	0.41	0.05 – 3.36	0.407
Vegetable servings per day			
3–4 servings (ref)	1		
None	4.27	1.20 – 7.03	<.001*
1–2 servings	3.33	0.94 – 5.71	.121
5 or more servings	0.18	0.02 – 0.38	<.001*
Sugary drink consumption			
Never (ref)	1		
Less than once a week	7.25	0.93 – 56.65	0.059
1–3 times per week	9.44	1.24 – 71.86	.030*
4 or more times per week	25.33	10.35 – 41.12	<.001*
Daily physical activity			
More than 60 min (ref)	1		
30–60 min	1.51	0.82 – 2.79	0.19
Less than 30 min	4.25	2.24 – 8.06	<.001*
Daily screen time			
Less than 1 hour (ref)	1		
1–2 hours	1.55	0.60 – 4.03	0.364
More than 2 hours	5.57	2.18 – 14.25	<.001*
Access to safe play areas			
No (ref)	1		
Yes	0.52	0.32 – 0.82	.005*
Family meals together			
Every day (ref)	1		
Several times a week	1.25	0.81 – 1.93	0.312
Rarely	0.52	0.18 – 1.49	0.224
Never	1.88	0.56 – 6.35	0.311

OR_A: Adjusted odds ratio CI: Confidence interval
** P is significant*

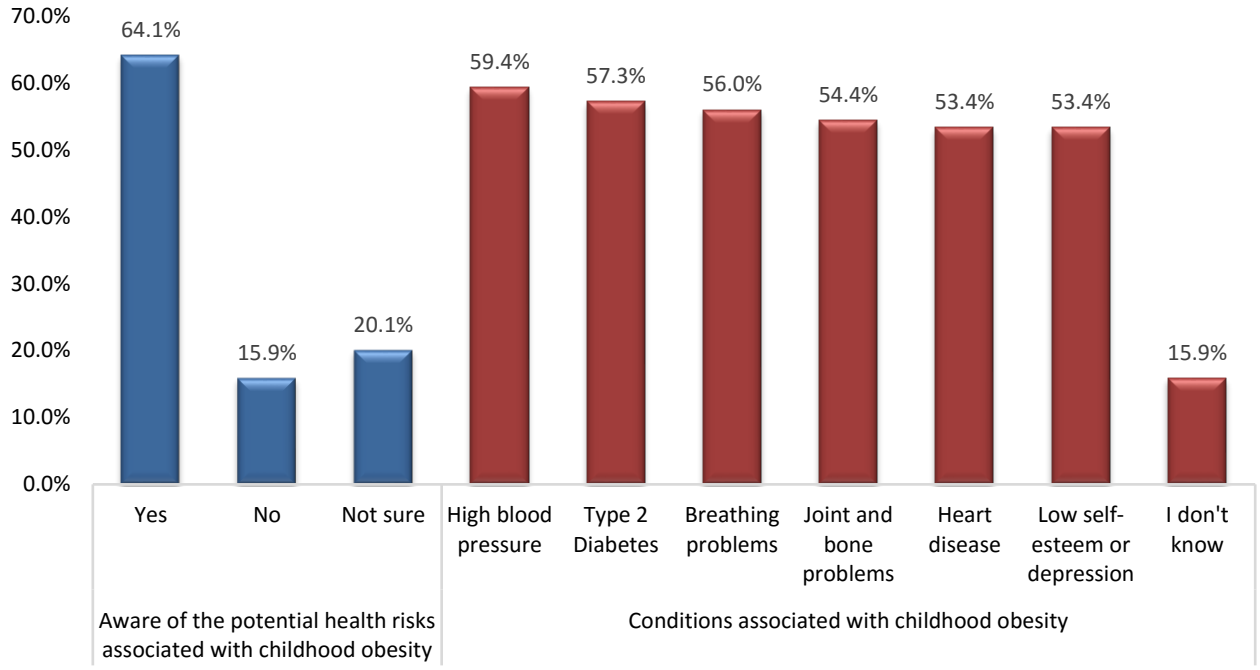

Figure 1: Parental Awareness of Health Risks Associated with Childhood Obesity and Recognition of Related Medical Conditions Among Parents in Al-Ahsa, Saudi Arabia

DISCUSSION

This study assessed parental awareness and perceptions of childhood obesity and identified several behavioral and environmental factors associated with overweight and obesity among children in Al-Ahsa, Saudi Arabia. The findings showed that childhood overweight and obesity remain common in the region, which agrees with previous Saudi studies reporting prevalence rates between 25% and 36% [Al-Hussaini *et al.,* 2019; Memish *et al.,* 2014; Salem *et al.,* 2022]. Similar trends have also been observed globally, including in the Middle Eastern countries, where childhood obesity has increased rapidly over recent decades [GBD 2015 Obesity Collaborators, 2017]. These findings reveal that childhood obesity continues to represent an important public health challenge requiring early prevention strategies. An important finding in this study was that many parents underestimated their child's actual weight status. A considerable number of parents of overweight or obese children believed that their child had a normal weight. This finding is consistent with previous research showing that parental misperception of child weight is common, especially in cultures where larger body size is associated with health and well-being [Al-Mohaimeed, 2016; Epstein *et al.,* 2023]. Previous studies also showed that parents who fail to recognize overweight are less likely to seek medical advice or introduce lifestyle modifications for their children [Costa *et al.,* 2022]. This reflects that improving parental recognition of unhealthy weight may play an important role in obesity prevention. Parental concern regarding childhood obesity was generally low in this study. Similar findings have been reported previously, where low concern was strongly linked to an inaccurate perception of child weight [Tompkins *et al.,* 2015]. In Saudi society, some families may not view childhood overweight as a medical issue, which may reduce motivation to apply preventive behaviors [Almutairi & Alhamidi, 2024]. Increasing public awareness about the health risks of childhood obesity may therefore be necessary to improve parental engagement in prevention efforts.

The dietary habits observed in this study were generally unhealthy, with many children consuming insufficient fruits and vegetables and frequently drinking sugary beverages. These findings are consistent with previous Saudi studies reporting unhealthy eating patterns among school-aged children [Al-Hazzaa *et al.,* 2011]. Low fruit and vegetable intake and frequent sugary drink consumption were significant predictors of childhood overweight and obesity, supporting findings from international studies on dietary risk factors for obesity and non-communicable diseases [Afshin *et al.,* 2019; Swinburn *et al.,* 2019]. Previous research has also emphasized the role of parental feeding practices and the home food environment in shaping children's eating behaviors and weight outcomes [Birch & Ventura, 2009].

Physical inactivity and prolonged screen time were also significantly associated with overweight and obesity. Many children did not meet recommended physical activity levels and spent long periods using electronic devices, which agrees with earlier Saudi and international studies linking sedentary behavior to

childhood obesity [Al-Hazzaa *et al.,* 2012; Chaput *et al.,* 2017]. Additionally, access to safe play areas was associated with lower obesity risk, highlighting the importance of supportive environmental factors in promoting child health [Davison & Birch, 2001].

The association between parental education and obesity risk appeared complex. Although a lower educational level was linked to a higher obesity risk, an increased risk was also observed among some highly educated families. Similar findings have been reported in Gulf countries and may reflect lifestyle-related factors such as greater fast-food consumption, car dependence, and limited parental supervision due to work commitments [Al-Hussaini *et al.,* 2019; Binrsheed, 2013].

This study found that younger and more educated parents had better awareness of the health risks related to childhood obesity, consistent with previous studies on parental health literacy [Shariff *et al.,* 2000]. However, parental awareness was not significantly associated with the child's BMI category, suggesting that some parents may underestimate obesity severity even when their children are overweight or obese. This finding supports the importance of routine obesity screening and parental counseling in pediatric healthcare settings [Simmonds *et al.,* 2016]. Greater parental awareness was also associated with healthier family behaviors, particularly encouraging physical activity and having regular family meals. Previous studies similarly reported that supportive parenting practices and regular family meals are linked with healthier dietary habits and lower obesity risk among children [Hammons & Fiese, 2011; Sleddens *et al.,* 2011]. These findings suggest that family-centered interventions aimed at improving parental awareness and daily lifestyle habits may help reduce childhood obesity.

Strengths and limitations

Despite the important findings, this study has some limitations. The cross-sectional design limits the ability to establish causality, and the use of parent-reported measurements may have introduced reporting bias. In addition, online data collection may have resulted in the overrepresentation of more educated families. Nevertheless, the study provides useful evidence regarding parental perceptions and lifestyle factors related to childhood obesity in Saudi Arabia and reveals the need for targeted prevention programs and future longitudinal research.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study revealed a high prevalence of childhood overweight and obesity in Al-Ahsa, Saudi Arabia, with inadequate fruit and vegetable intake, frequent sugary drink consumption, physical inactivity, excessive screen time, and parental educational level identified as the strongest independent predictors of excess weight among children. A substantial proportion of parents inaccurately perceived their child's weight status and demonstrated limited concern, even when children were objectively classified as overweight or obese, revealing a critical gap between parental awareness and practice. These findings indicate the urgent need for culturally sensitive parental education programs, routine weight screening in pediatric primary care, family-centered behavioral interventions targeting diet and physical activity simultaneously, and policy-level measures to improve access to safe play areas and regulate the availability of unhealthy foods. Collaborative efforts across healthcare, educational, and governmental sectors are essential to effectively address the growing burden of childhood obesity in the region.

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