

Article

Association of Maternal Feeding Style with Fruit and Vegetable Consumption in Saudi Preschoolers: A Nationwide Cross-Sectional Study

Amal Abdulaziz Al-buobayd, Hala Hazam Al-Otaibi *  and Hoda A. S. Farag

Department of Food and Nutrition Science, College of Agricultural and Food Science, King Faisal University, Al-Ahsa 31982, Saudi Arabia; 220001585@student.kfu.edu.sa (A.A.A.-b.); hfarag@kfu.edu.sa (H.A.S.F.)

* Correspondence: hhalotaibi@kfu.edu.sa

Abstract: Parental feeding style (PFS) remarkably influences fruit and vegetable (F&V) consumption in preschoolers. This study aimed to determine the association between PFS and preschoolers' F&V consumption, as influenced by socioeconomic factors. A nationwide cross-sectional study was conducted among 1418 mothers of children aged 3–5 years in Saudi Arabia. Multinomial logistic regression model analysis was performed to assess the association between PFS and children's daily F&V intake using the Parental Feeding Style Questionnaire. The influence of socioeconomic factors on this association was also evaluated. For mothers with university degrees, encouragement, emotional, and instrumental feeding enhanced their children's intake of F&Vs, fruits, and vegetables, respectively. Children from families earning SAR >10,000 monthly had increased F&V intake with encouragement feeding and increased fruit intake with emotional feeding. However, F&V intake was reduced in children of working mothers with controlling feeding styles. Breastfeeding for <6 months was associated with increased F&V intake through emotional feeding. The most prevalent feeding style was encouragement, followed by emotional, with control and instrumental styles being less common. This study provides strong evidence on the association between PFS and daily F&V intake in Saudi preschoolers. Interventional and longitudinal studies on PFS are required to confirm these findings.

Keywords: fruit; vegetable; preschool children; parental feeding style; Parental Feeding Style Questionnaire; encouragement feeding



Citation: Al-buobayd, A.A.; Al-Otaibi, H.H.; Farag, H.A.S. Association of Maternal Feeding Style with Fruit and Vegetable Consumption in Saudi Preschoolers: A Nationwide Cross-Sectional Study. *Nutrients* **2023**, *15*, 4735. <https://doi.org/10.3390/nu15224735>

Academic Editor: Carol Johnston

Received: 11 October 2023

Revised: 2 November 2023

Accepted: 7 November 2023

Published: 9 November 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Healthy living in people of all ages is required to meet the sustainable development goals (SDGs). Significant progress has been made in increasing life expectancy and decreasing maternal and child mortality [1]. However, more research is required to promote healthy habits, such as consumption of a balanced diet rich in fruits and vegetables (F&Vs). According to the World Health Organization (WHO), adults and children should consume 400 g (five servings) of F&Vs daily [2]. Insufficient intake of F&Vs is a major risk factor for chronic diseases, accounting for 14%, 11%, and 9% of mortalities from gastrointestinal cancer, heart disease, and stroke, respectively, worldwide [3,4].

The consumption of F&Vs is considered a vital part of nutrition at all stages of life. According to a 2015 UNICEF report, children under the age of 5 years are considered a valuable resource worldwide, and focusing on this age group will help accomplish the SDGs by 2030 [5]. The preschool age (3–5 years) is crucial for physical and mental development [6]. Consuming F&Vs during childhood has a positive impact on long-term health outcomes, can aid in weight control, and lowers the risk of childhood obesity, which is increasing globally [7].

However, the recommended daily intake of F&Vs for children varies between countries and health organizations. Few countries have specific dietary recommendations, and some European countries (Norway, the Netherlands, Greece, Finland, and Denmark) have specific dietary guidelines ranging from 100 to 500 g or one to three servings daily [8]. The United States recommends that children aged 4–8 years should consume 1–1.5 cup of fruits and 1.5 cup of vegetables daily [6].

Other nations, notably the United Kingdom, have accepted the WHO recommendation of at least 400 g per day for the general population, including children [9,10]. The recommended daily intake of F&Vs for children aged 4–8 years in the Kingdom of Saudi Arabia (KSA) is five servings per day [11]. These discrepancies are most likely due to local factors, such as dietary traditions and available resources. Nonetheless, there is agreement that consuming F&Vs daily is essential for good health [4,12].

Previous research found that a considerable proportion of children aged 3–5 years do not meet their daily F&V needs. In England, for example, only 17% of boys and 19% of girls consume the recommended five or more servings of F&Vs per day [13]. According to a study conducted in Hunan, China, 35.6% and 42.4% of children aged 4–5 years consume vegetables and fruits more than once per day, respectively [14]. A Lebanese study found that only 17.8% of children consumed the recommended daily intake of vegetables, and only 34.3% consumed fruits daily [15]. In Oman, 29% and 34% of children aged 2–5 years were found to consume vegetables and fruits two or more times daily, respectively [16]. Similarly, in a study in the KSA, only 42% of preschool children were found to consume fruits daily [17].

It should be noted that mothers' dietary habits and behaviors play a crucial role in shaping their children's eating habits through role modeling. Several studies have found that children's food preferences are influenced by their mothers' dietary habits and F&V consumption. Groele et al. [18] found a correlation between the daily servings consumed by mothers and those consumed by their children in Poland and Romania. Another study in Oman by Almaamary et al. [16] found that mothers who do not like F&Vs may influence their children's preferences. Robson et al. [19] reported the same finding.

The association between high family socioeconomic status, especially parental educational level and family income, and children's F&V consumption has been well documented [20,21]. The educational level of mothers plays a significant role in shaping the F&V intake of preschool children. Mothers with higher education tend to have a better understanding of nutrition, leading to healthier family food choices. Their awareness of the nutritional value of F&Vs enables them to encourage their children to consume these foods. This maternal education serves as a crucial factor in promoting healthy F&V consumption patterns during early childhood, as evidenced in studies from Finland, France, and South Korea [22–24].

High-income households are more likely to purchase healthy foods that are rich in fiber and low in salt and added sugar, indicating a healthy-eating home environment [25,26]. Moreover, the bond built between a mother and her infant through breastfeeding is critical in determining a child's future satiety responsiveness later in life. A mother's continuous consumption of F&Vs can also influence the development of a child's food choices. This is because children develop a taste for the flavors that they are exposed to during breastfeeding [27,28].

Parental feeding style (PFS) influences children's food intake, especially that of F&Vs [29,30]. The ways parents interact with their children during mealtimes play a significant role in the development of healthy eating practices and food preferences. These styles include "control", which involves setting a specific time for the child to have a snack; "encouragement", which involves praising the child if they finish the food provided; "emotional", which involves rewarding a child with food when they behave well; and "instrumental", which involves giving the child food when they feel bored to make them feel better [29–31].

Studies have shown that parents who adopt a healthy and balanced feeding style help their children develop healthy eating habits, which can help prevent nutrition-related diseases and promote overall health and growth [32,33]. A study conducted in the Netherlands used the Parental Feeding Style Questionnaire (PFSQ) scale to measure the feeding style of parents in relation to F&V and sugar-sweetened beverage (SSB) consumption. The children of parents who used encouragement and control feeding styles consumed more F&Vs and fewer SSBs. The study suggested that the encouragement feeding style helps children learn to enjoy the taste of healthy foods [32]. A study conducted in Turkey on children aged 3–5 years reported that encouragement and instrumental feeding styles led to greater dietary diversity in children [33]. Additionally, a study conducted in Sri Lanka found that parents of preschool children were more likely to use control and encouragement feeding styles [34].

Previous studies conducted in the KSA have focused on the impact of parental beliefs, attitudes, and practices regarding child feeding on preschool-aged children and mothers' concerns about their children's weight or consumption of unhealthy food. Common scales used among Saudi preschool children are the Child Feeding Questionnaire and the Children's Eating Behavior Questionnaire [35–37]. However, the PFSQ has never been used to assess PFS regarding daily F&V intake in this age group. Owing to the scarcity of research in this area, there is an urgent need for studies on the relationship between PFS and F&V consumption among children aged 3–5 years in the KSA. The specific research questions addressed in this study are as follows:

- What is the average daily consumption of F&Vs among preschool-aged children in the KSA?
- What are the different feeding styles associated with F&V consumption among preschool-aged children in the KSA?
- How does the interaction between feeding styles and socioeconomic factors influence F&V consumption?

2. Materials and Methods

2.1. Design and Sample Study

This cross-sectional study was performed to collect data from the Northern, Southern, Central, Eastern, and Western administrative regions of Saudi Arabia that were recorded from 2 July 2022 to 29 November 2022 through an electronic questionnaire administered via the Internet using Google Forms. According to data from the General Authority for Statistics (GAStat) in Saudi Arabia, there are 2,844,501 children aged 0–5 years [38]. The sample size was calculated based on an expected correlation coefficient of 0.15, a strength of 80%, and an alpha level of 0.05, and it was found that the number of participants had to be at least 385 [39].

We employed a non-probability convenience sampling method in the virtual environment, specifically using a snowball-type recruitment approach, for data collection [40]. Data on children were collected from their mothers, as mothers play a significant role in child feeding in many countries [35,41]. The survey link included the objectives and procedures of the study, the privacy policies, and an explanation of participation. Mothers who were selected and agreed to participate were instructed to provide data on only one child. Survey links were distributed on four social media platforms to ensure a high rate of response [42] (WhatsApp, Telegram, Instagram, and Twitter) from all over the KSA, from 2 July 2022 to 29 November 2022.

The researchers encountered difficulty in directly engaging with mothers of kindergarten students across all regions in Saudi Arabia. This posed challenges in identifying suitable participants. Consequently, they had to resort to utilizing social media platforms to locate and recruit the participants. Previous research findings have demonstrated that utilizing social media for sampling is an effective and efficient method to recruit study participants. This approach enables a larger sample size, a shorter completion time, and reduced application costs [40,43].

Participation in the study was voluntary, with 1682 participants. The criteria for joining the study were determined, including mothers of Saudi children between the ages of 3 and 5 years old who did not have any obvious health problems and who completed the questionnaire.

This was decided to ensure that any impact on children's feeding habits could be attributed to factors other than underlying health issues. Non-Saudi mothers and children who did not provide their informed consent to participate, who had missing data in the questionnaire, and who did not meet the health criteria and other conditions specified for participation were excluded. With the aim of ensuring the validity and the reliability of the results and focusing on the impact of factors associated with children and their families, as well as the ability of researchers to extract accurate and reliable data, data were collected from 1418 mother–child pairs included in the final analysis. Among them, 264 pairs (15.6%) with incomplete participation were excluded to enhance the precision of the estimates, while missing data introduced significant variability.

2.2. Independent Variables

2.2.1. Demographics and Other Potential Confounders

Data on the mother's age, marital status, employment status, education level, family monthly income, and region of residence; the father's age, education level, and employment status; and the child's age, sex, number of siblings, kindergarten attendance, and breastfeeding duration were collected. These variables were selected based on previous studies that have shown their impact on children's F&V intake [18,25,32,44,45].

2.2.2. Mothers' Daily Intake of F&Vs

F&V consumption was assessed based on the responses to the question "How many servings of F&Vs do you usually eat daily?", which has been validated in previous studies [46,47]. The study defined one serving as one cup of raw vegetables, half a cup of cooked vegetables, or one medium-sized fruit according to the recommended daily amount of F&Vs for Saudi adults aged 19–50 years, with seven to eight servings daily [11]. The F&V consumption responses were categorized into none, one serving, two servings, three to four servings, five to six servings, and seven servings or more.

2.2.3. PFS

PFS was assessed using the PFSQ, a 27-item questionnaire developed by Wardle et al. [48] in English, and it has been translated into many languages [32,49–51]. The PFSQ was designed for use in a study examining obesity risk in children of mothers with obesity and those with normal weight.

The scale has four subdimensions: emotional feeding (five items, e.g., "rewarding the child with food when they behave well"), instrumental feeding (four items, e.g., "giving the child food when they feel bored to make them feel better"), encouragement feeding (eight items, e.g., "praising the child if they finish the food provided"), and control feeding (ten items, e.g., "setting a specific time for the child to have a snack"). Respondents rated each item on a 5-point Likert scale (ranging from "never" to "always"). A translation and back-translation procedure was used to create an Arabic version, and the completed questionnaires were pretested with a convenience sample of 10 mothers. Cronbach's alpha coefficients varied among the feeding styles: emotional (0.924), instrumental (0.916), encouragement (0.838), and control (0.857). The obtained values indicated excellent to good internal consistency, which is similar to the findings of studies conducted in several countries [32,49,50].

2.3. Dependent Variables

F&V Intake in Children

Young children are sometimes in the care of others, such as grandparents or paid babysitters, during the day while their parents are at work. During these times, parents'

ability to accurately report their children's dietary intake, especially that of F&Vs, is influenced by other elements, such as memory and the time required by the assessment method used [52]. In addition, the online nature of this study required a valid and reliable short assessment method that was easy to complete and recall. To assess children's daily F&V intake, mothers were asked to answer two questions: "how many servings per day they consumed fruit?; how many servings per day they consumed vegetables?". To help mothers provide accurate information about their children's food intake, photographs of F&V portion sizes were included. All responses were coded based on the reported number of serving spoons of vegetables (one serving spoon of vegetables = 50 g) or pieces of fruit (one pieces of fruit = 100 g). The response options for vegetable consumption were as follows: "less than one serving spoon = 0.5 serving spoon/day", "one to two serving spoons = 1.5 serving spoon/day", "three to four serving spoons = 3.5 serving spoons/day", "five to six serving spoons = 5.5 serving spoons/day", and "more than six serving spoons = 7 serving spoons/day". The response options for fruit consumption were as follows: "less than one piece = 0.5 piece/day", "one piece = 1 piece/day", "two pieces = 2 pieces/day", and "more than two pieces = 3 pieces/day", similar to the guidelines used in previous studies [32,53,54]. Children who consumed, on average, 1.5 pieces/day of fruit and 3 serving spoons/day of vegetables were categorized as meeting the daily requirements of F&V intake.

2.4. Statistical Analysis

Descriptive analyses were performed, and data are presented as frequencies, percentages, means, and standard deviations. Continuous data were analyzed using the independent-samples *t*-test and categorical variables using the chi-square test, followed by multinomial logistic regression analysis to examine the relationship between PFS and the children's F&V intake, as influenced by other potential factors such as socioeconomic variables. All analyses were carried out using IBM SPSS Statistics version 29 software, with the significance level set at $p < 0.05$.

3. Results

Table 1 shows the characteristics of the 1418 participants and the differences in fruit and vegetable intake across these characteristics. In total, 35.7% of the children consumed ≥ 1.5 pieces/day of fruits, while 59.3% consumed ≥ 3 serving spoons/day of vegetables. There were more girls (65.2%) than boys among the children included, and the average age of the children was 4.18 ± 0.83 years, with 43.7% having two or more siblings. Almost half of the children were attending kindergarten (47.1%), with no significant difference between them. A total of 61% of the mothers in this study breastfed their children for ≥ 6 months, and 58.3% and 65.4% of the children consumed the recommended daily intake of F&Vs, respectively, with a significant difference. The majority of children from the Western region (27.8%) consumed ≥ 3 serving spoons/day of vegetables (32.1%), and the majority of those from the Eastern region (26.6%) consumed ≥ 1.5 pieces/day of fruits (31.6%), with significant differences between the regions. The mean age of the mothers was 32.19 ± 6.18 years, and that of fathers was 36.81 ± 7.37 years. Most mothers (88.2%) and fathers (78.8%) were married and had high education levels. However, 57.4% of the mothers were unemployed. Approximately half of the families had a monthly income of SAR $> 10,000$ (Saudi Arabian riyals). Regarding the mothers' consumption of F&Vs, 22.4% consumed ≥ 7 servings per day, with a significant difference between the variables.

Table 1. Participants’ characteristics and differences in fruit and vegetable intake across these characteristics (*n* = 1418).

| Variable | All Participants | Fruits χ^2/t | | <i>p</i> Value | Vegetables χ^2/t | | <i>p</i> Value |
|---|------------------|-----------------------------|------------------------------------|---------------------------|------------------------------------|--|----------------|
| | | <1.5 Pieces/d 912 (64.3) | \geq 1.5 Pieces/d 506 (35.7%) | | <3 Serving Spoons/d 577 (40.7%) | \geq 3 Serving Spoons/d 841 (59.3%) | |
| | | Mean (SD) or <i>n</i> (%) | | Mean (SD) or <i>n</i> (%) | | | |
| Children | | | | | | | |
| Age (years) | 4.18 ± 0.83 | 4.15 ± 0.84 | 4.13 ± 0.82 | 0.951 | 4.11 ± 0.84 | 4.2 ± 0.82 | 0.0922 |
| Sex | | | | | | | |
| Male | 493 (34.8) | 290 (31.8) | 203 (40.1) | 0.051 | 197 (34.1) | 296 (35.2) | 0.682 |
| Female | 925 (65.2) | 622 (68.2) | 303 (59.9) | | 380 (65.9) | 545 (64.8) | |
| Number of siblings | | | | | | | |
| None | 363 (25.6) | 223 (24.5) | 140 (27.7) | 0.791 | 153 (26.5) | 210 (25) | 0.432 |
| One | 436 (30.7) | 298 (32.7) | 138 (27.3) | | 179 (31) | 257 (30.6) | |
| Two or more | 619 (43.7) | 391 (42.9) | 228 (45.1) | | 245 (42.5) | 374 (44.5) | |
| Attending kindergarten | | | | | | | |
| Yes | 668 (47.1) | 454 (49.8) | 412 (42.3) | 0.136 | 257 (44.5) | 411 (48.9) | 0.109 |
| No | 750 (52.9) | 458 (50.2) | 292 (57.7) | | 320 (55.5) | 430 (51.1) | |
| Breastfeeding duration | | | | | | | |
| Less than 6 months | 544 (38.4) | 333 (36.5) | 211 (41.7) | 0.031 * | 253 (43.8) | 291 (34.6) | 0.000 *** |
| 6 months or more | 874 (61.6) | 579 (63.5) | 259 (58.3) | | 324 (56.2) | 550 (65.4) | |
| Parents | | | | | | | |
| Mother’s age (years) | 32.19 ± 6.18 | 31.96 ± 6.12 | 32.62 ± 6.26 | 0.54 | 31.84 ± 6.23 | 32.43 ± 6.12 | 0.075 |
| Mother’s marital status | | | | | | | |
| Widow | 45 (3.2) | 23 (2.5) | 22 (4.3) | 0.171 | 14 (2.4) | 31 (3.7) | 0.305 |
| Divorced | 122 (8.6) | 79 (8.7) | 43 (8.5) | | 46 (8) | 76 (9) | |
| Married | 1251 (88.2) | 810 (88.8) | 441 (87.2) | | 517 (89.6) | 743 (87.3) | |
| Mother’s education level | | | | | | | |
| Secondary school or lower | 300 (21.2) | 211 (23.1) | 89 (17.6) | 0.008 * | 140 (24.3) | 160 (19) | 0.018 * |
| University or higher | 1118 (78.8) | 71 (76.9) | 417 (82.4) | | 437 (75.7) | 681 (81) | |
| Mother’s employment status | | | | | | | |
| Unemployed | 814 (57.4) | 535 (58.7) | 279 (55.1) | 0.043 * | 348 (60.3) | 466 (55.4) | 0.047 * |
| Employed | 604 (42.6) | 377 (41.3) | 227 (44.9) | | 229 (39.7) | 375 (44.6) | |
| Region of residence | | | | | | | |
| Eastern | 377 (26.6) | 217 (23.8) | 160 (31.6) | 0.000 *** | 162 (28.1) | 215 (25.6) | 0.000 *** |
| Central | 254 (17.9) | 183 (20.1) | 71 (14) | | 126 (21.8) | 128 (15.2) | |
| Western | 394 (27.8) | 273 (29.9) | 121 (23.9) | | 124 (21.5) | 270 (32.1) | |
| Northern | 230 (16.2) | 133 (14.6) | 97 (19.2) | | 77 (13.3) | 153 (18.2) | |
| Southern | 163 (11.5) | 106 (11.6) | 57 (11.3) | | 88 (15.3) | 75 (8.9) | |
| Father’s age (years) | 36.81 ± 7.37 | 36.4 ± 7.03 | 37.55 ± 7.91 | 0.055 | 36.32 ± 7.79 | 37.15 ± 7.05 | 0.054 |
| Father’s educational level | | | | | | | |
| Secondary school or lower | 332 (23.4) | 218 (23.9) | 114 (22.5) | 0.558 | 161 (27.9) | 171 (20.3) | 0.101 |
| University or higher | 1086 (76.6) | 694 (76.1) | 329 (77.7) | | 416 (72.1) | 670 (79.7) | |
| Father’s employment status | | | | | | | |
| Self-employment | 181 (12.8) | 99 (10.9) | 82 (16.2) | 0.054 | 57 (9.9) | 124 (14.7) | 0.081 |
| Private-sector employee | 487 (34.3) | 330 (36.2) | 157 (31) | | 181 (31.4) | 306 (36.4) | |
| Government-sector employee | 750 (52.9) | 483 (53) | 267 (52.8) | | 339 (58.8) | 411 (48.9) | |
| Monthly family income | | | | | | | |
| SAR 10,000 or less | 674 (47.5) | 478 (52.4) | 196 (38.7) | 0.000 *** | 232 (56) | 351 (41.7) | 0.000 *** |
| More than SAR 10,000 | 744 (52.5) | 434 (47.6) | 310 (61.3) | | 254 (44) | 490 (58.3) | |
| Mother’s mean daily consumption of F&Vs | 3.48 ± 1.94 | 2.99 ± 1.55 | 4.36 ± 2.23 | 0.000 *** | 2.68 ± 1.54 | 4.03 ± 1.99 | 0.000 *** |
| \geq 7 serving/d | 317 (22.4) | 789 (86.5) | 321 (61.7) | 0.000 *** | 252 (91) | 576 (68.5) | 0.000 *** |
| <7 serving/d | 1101 (77.6) | 123 (13.5) | 194 (38.3) | | 52 (9) | 265 (31.5) | |

* *p* ≤ 0.05; *** *p* ≤ 0.0001. SD, standard deviation; F&Vs, fruits and vegetables.

3.1. PFSs and Children’s Consumption of F&Vs

Table 2 shows the results of the independent-samples *t*-test indicating statistically significant differences between PFSs and F&V consumption.

Table 2. Parental feeding styles and daily consumption of fruits and vegetables among the children.

| Variable | All Participants | Fruits | | <i>p</i> Value | Vegetables | | <i>p</i> Value |
|-----------------------|------------------|---------------|---------------------|----------------|---------------------|---------------------------|----------------|
| | | <1.5 Pieces/d | \geq 1.5 Pieces/d | | <3 Serving Spoons/d | \geq 3 Serving Spoons/d | |
| Instrumental feeding | 3.12 ± 1.29 | 3.18 ± 1.27 | 3.00 ± 1.33 | 0.022 * | 3.18 ± 1.25 | 2.87 ± 1.43 | 0.009 ** |
| Control feeding | 3.16 ± 1.30 | 3.05 ± 1.4 | 3.22 ± 1.2 | 0.026 * | 3.2 ± 1.29 | 3.013 ± 1.33 | 0.017 * |
| Encouragement feeding | 3.69 ± 1.09 | 3.38 ± 1.02 | 3.57 ± 0.97 | 0.031 * | 3.61 ± 1.10 | 3.99 ± 1.01 | 0.001 ** |
| Emotional feeding | 3.45 ± 1.00 | 3.38 ± 1.02 | 3.57 ± 1 | 0.001 ** | 3.42 ± 1.03 | 3.45 ± 0.09 | 0.001 ** |

* *p* ≤ 0.05; ** *p* ≤ 0.001.

3.2. Association of PFS and Children's Consumption of F&Vs with Demographic Factors

Only variables with significant differences were included in the multinomial logistic regression analysis (Tables 3 and 4). Children of employed mothers who used control feeding had low intakes of F&Vs (odds ratio (OR) = 1.016; 95% confidence interval (CI) 0.989–1.043; $p \leq 0.001$ and OR = 1.013; 95% CI 0.980–1.046; $p \leq 0.05$, respectively). Mothers with a higher education level used emotional (OR = 0.936; 95% CI 0.877–0.999; $p \leq 0.05$) and encouragement (OR = 1.067; 95% CI 1.023–1.112; $p \leq 0.05$) feeding to increase fruit intake in their children, whereas they used instrumental (OR = 1.07; 95% CI 1.002–1.143; $p \leq 0.05$) and encouragement (OR = 1.062; 95% CI 1.029–1.096; $p \leq 0.001$) feeding to increase vegetable intake. In contrast, mothers with family incomes SAR >10,000 who used emotional and encouragement feeding had children who consumed more F&Vs (OR = 1.095; 95% CI 1.042–1.51; $p < 0.001$ and OR = 1.049; 95% CI 1.015–1.085; $p \leq 0.05$, respectively). A higher family income influenced the association between encouragement feeding and intake of ≥ 3 serving spoons/day of vegetables (OR = 1.031; 95% CI 1.006–1.057; $p \leq 0.05$).

In addition, longer breastfeeding duration influenced the association between emotional feeding and increased intake of F&Vs (OR = 1.051; 95% CI 1.016–1.88; $p \leq 0.05$ and OR = 1.070; 95% CI 1.039–1.101; $p \leq 0.001$, respectively). Finally, fruit (OR = 1.113; 95% CI 1.041–1.190; $p \leq 0.05$) and vegetable (OR = 1.049; 95% CI 1.022–1.077; $p \leq 0.001$) consumption increased among children whose mothers consumed ≥ 7 serving/day of F&Vs and used encouragement feeding.

Table 3. Association of parental feeding styles and children's consumption of fruits with demographic factors.

| Variable | Parental Feeding Styles OR (95% Confidence Interval) | | | |
|---|--|-----------------------|-----------------------|------------------------|
| | Instrumental Feeding | Emotional Feeding | Encouragement Feeding | Control Feeding |
| Fruits < 1.5 pieces/d | | | | |
| Mother's education level | Reference category | | | |
| Secondary school or lower | 1.029 (0.970–1.092) | 0.997 (0.949–1.046) | 1.022 (0.992–1.054) | 0.997 (0.967–1.028) |
| University or higher | | | | |
| Mother's employment status | Reference category | | | |
| Unemployed | 1.050 (0.997–1.107) | 0.998 (0.957–1.041) | 0.952 (0.927–0.977) | 1.016 (0.989–1.043) ** |
| Employed | | | | |
| Monthly family income | Reference category | | | |
| SAR 10,000 or less | 1.062 (1.009–1.118) | 0.986 (0.946–1.028) | 0.986 (0.961–1.012) | 1.048 (1.021–1.076) |
| More than SAR 10,000 | | | | |
| Breastfeeding duration | Reference category | | | |
| Less than 6 months | 1.065 (1.011–1.123) | 0.959 (0.919–1.001) | 0.978 (0.953–1.004) | 1.042 (1.015–1.071) |
| 6 months or more | | | | |
| Mother's mean daily consumption of F&Vs | Reference category | | | |
| <7 serving/d | 0.981 (0.908–1.59) | 1.115 (1.045–1.190) | 0.990 (0.953–1.029) | 0.985 (0.948–1.024) |
| ≥ 7 serving/d | | | | |
| Fruits ≥ 1.5 pieces/d | | | | |
| Mother's education level | Reference category | | | |
| Secondary school or lower | 1.057 (0.970–1.152) | 0.936 (0.877–0.999) * | 1.067 (1.023–1.112) * | 0.921 (0.960–1.046) |
| University or higher | | | | |
| Mother's employment status | Reference category | | | |
| Unemployed | 0.972 (0.911–0.1.037) | 1.051 (1.002–1.102) | 1.017 (0.984–1.051) | 1.045 (1.009–1.081) |
| Employed | | | | |
| Monthly family income | Reference category | | | |
| SAR 10,000 or less | 0.957 (0.895–1.023) | 1.095 (1.042–1.51) ** | 1.049 (1.015–1.085) * | 1.009 (0.975–1.046) |
| More than SAR 10,000 | | | | |
| Breastfeeding duration | Reference category | | | |
| Less than 6 months | 0.941 (0.882–1.004) | 1.051 (1.016–1.88) * | 0.998 (0.967–1.031) | 1.028 (0.981–1.078) |
| 6 months or more | | | | |
| Mother's mean daily consumption of F&Vs | Reference category | | | |
| <7 serving/d | 0.899 (0.841–0.960) | 1.049 (0.99–1.012) | 1.113 (1.041–1.190) * | 1.025 (0.990–1.062) |
| ≥ 7 serving/d | | | | |

* $p \leq 0.05$; ** $p \leq 0.001$. OR, odds ratio; F&Vs, fruits and vegetables.

Table 4. Association of parental feeding styles and children’s consumption of vegetables with demographic factors.

| Variable | Parental Feeding Styles OR (95% Confidence Interval) | | | |
|---|--|------------------------|------------------------|-----------------------|
| | Instrumental Feeding | Emotional Feeding | Encouragement Feeding | Control Feeding |
| Vegetable < 3 serving spoons/d | | | | |
| Mother’s education level | Reference category | | | |
| Secondary school or lower | 1 (0.930–1.075) | 0.977 (0.925–1.032) | 1.018 (0.982–1.057) | 0.986 (0.95–1.024) |
| University or higher | | | | |
| Mother’s employment status | Reference category | | | |
| Unemployed | 1.037 (0.972–1.0105) | 1.022 (0.974–1.073) | 0.963 (0.932–0.995) | 1.013 (0.980–1.046) * |
| Employed | | | | |
| Monthly family income | Reference category | | | |
| SAR 10,000 or less | 1.040 (0.977–1.107) | 1.001 (0.956–1.049) | 0.997 (0.966–1.029) | 1.025 (0.993–1.059) |
| More than SAR 10,000 | | | | |
| Breastfeeding duration | Reference category | | | |
| Less than 6 months | 1.027 (0.965–1.093) | 0.999 (0.953–1.046) | 1.001 (0.970–1.033) | 1.007 (0.975–1.039) |
| 6 months or more | | | | |
| Mother’s mean daily consumption of F&Vs | Reference category | | | |
| <7 serving/d | 1.006 (0.896–1.130) | 1.105 (1.009–1.210) * | 0.946 (0.893–1.002) | 1.001 (0.944–1.061) |
| ≥7 serving/d | | | | |
| Vegetable ≥ 3 serving spoons/d | | | | |
| Mother’s education level | Reference category | | | |
| Secondary school or lower | 1.07 (1.002–1.143) * | 0.956 (0.905–1.009) | 1.062 (1.029–1.096) ** | 0.1013 (0.980–1.047) |
| University or higher | | | | |
| Mother’s employment status | Reference category | | | |
| Unemployed | 0.990 (0.941–1.042) | 1.021 (0.980–1.063) | 0.988 (0.965–1.031) | 1.027 (1.00–1.055) |
| Employed | | | | |
| Monthly family income | Reference category | | | |
| SAR 10,000 or less | 0.891 (0.945–1.050) | 1.040 (0.998–1.085) | 1.031 (1.006–1.057) * | 1.031 (1.003–1.060) |
| More than SAR 10,000 | | | | |
| Breastfeeding duration | Reference category | | | |
| Less than 6 months | 1.004 (0.951–1.059) | 1.070 (1.039–1.101) ** | 0.971 (0.947–0.997) | 0.981 (0.940–1.024) |
| 6 months or more | | | | |
| Mother’s mean daily consumption of F&Vs | Reference category | | | |
| <7 serving/d | 0.915 (0.865–0.967) | 1.040 (0.995–1.089) | 1.049 (1.022–1.077) ** | 0.675 (0.994–1.023) |
| ≥7 serving/d | | | | |

* $p \leq 0.05$; ** $p \leq 0.001$. OR, odds ratio; F&Vs, fruits and vegetables.

4. Discussion

This nationwide study was conducted in the KSA to provide a comprehensive understanding of the relationship between PFS and F&V consumption among children aged 3–5 years, as influenced by socioeconomic factors, such as mother’s education level, employment status, mother’s daily F&V consumption, household income, and duration of breastfeeding. Approximately 60% of the children consumed ≥ 3 serving spoons/day of vegetables compared with a low prevalence of fruit consumption (35.7%; ≥ 1.5 pieces/d). These findings are not completely consistent with those from previous national and international studies that have shown a reduction in F&V consumption among children [16,17,55]. Our finding that approximately 66% of children who were breastfed for >6 months consumed ≥ 3 serving spoons/day of vegetables suggests that breastfeeding may help shape a child’s taste preferences [28]. Additionally, more than half of the children attended kindergarten, where vegetables are frequently more easily available than fruits; for example, vegetables are frequently offered at meals or as snacks at kindergarten, whereas fruits are usually regarded as snacks [52]. Another explanation is that most children with two or more siblings consumed adequate amounts of F&Vs (45.1% and 44.5%, respectively). Finally, children may be more familiar with cooked vegetables served regularly at home than with fresh fruits [56]. Siblings can influence each other’s behavior; for example, if an older sibling follows a good diet, the younger sibling is more likely to follow suit [45].

More than two-thirds of the mothers (77.6%) did not meet their daily F&V requirements, similar to the findings of previous studies among Saudi women [46,47]. To set a good example for their children, mothers must actively include F&Vs in their diets [18,19]. Mothers can considerably influence their children's eating habits by adopting healthy practices, filling their homes with nutritious food, involving their children in cooking activities, and supporting balanced family meals.

Significant differences were observed between the four sub-dimensions of PFS regarding children's daily F&V intake. It was found that the use of encouragement feeding was the highest, followed by emotional feeding, control feeding, and instrumental feeding. These findings are consistent with those of previous studies conducted in Sri Lanka [34] and Indonesia [57], where the most-used style was encouragement feeding. In contrast, other studies have reported control feeding to be the most commonly used style [32,44]. These differences can be explained by the cultural and social factors that influence parental feeding practices [58–60].

Many Saudi women now work outside their homes to support their families. However, mothers are not relieved of their usual household duties but are instead burdened with both their job and household responsibilities. The current study found that the use of control feeding by working mothers was associated with decreased fruit intake. A similar study conducted to examine the association of maternal parenting styles with healthy and unhealthy food intake in Australian preschool children found statistically significant interactions indicating that mothers' employment status may moderate the relationship between parenting style (authoritarian and permissive) and low fruit intake ($p = 0.019$), increased SSB consumption ($p < 0.001$), and consumption of hot takeaway food ($p = 0.048$) in children [56]. Further research is needed to examine the influence of maternal employment status, with more focus on the impact of other potential factors, such as working hours and work pressures, which may provide further insights into the association between PFS and children's F&V intake.

Education is of the utmost importance in enlightening minds, promoting continuous learning, understanding relationships, and guiding personal matters. Education effectively contributes to the acquisition of new knowledge and serves as a powerful tool for self-development and family progress. The findings of the present study indicate that encouragement feeding tends to promote high F&V intake in children whose mothers had a university degree or higher, consistent with the findings of previous studies [32,50,61]. Furthermore, mothers with high education levels used instrumental feeding only to increase vegetable intake in their children, which could be due to parents using vegetables to comfort or reward their children when they are bored. The combination of these two feeding styles may help children meet their daily F&V intake requirements [62]. Emotional feeding was significantly associated with higher fruit consumption in children in the present study. Contrastingly, Lo et al. [50] found that control feeding was the most common style used by highly educated parents to increase F&V intake in preschool children in Hong Kong. In general, educated mothers are more likely to promote healthy behaviors in their children, and a study conducted in Norway revealed that children whose mothers completed university education consumed an average of 79.7 g of vegetables daily, compared with an average of 28.9 g in children whose mothers had a lower education level [63]. Other studies confirmed these results [18,62].

Supporting and encouraging mothers to continue breastfeeding and feeding their children healthy foods is essential. Previous studies [64–66] have suggested that mothers need continuity, support, and encouragement to achieve this. According to previous studies, a longer duration of breastfeeding was positively associated with a higher amount of F&V consumption and a greater diversity of vegetables consumed by children and adults. The flavors of food consumed by mothers are likely to be passed on to their children via breast milk [28,67–69]. However, mothers who breastfed their children for >6 months were more likely to use emotional feeding to increase F&V intake. To the best of our knowledge, no previous study has investigated the association between PFS and F&V intake, as influenced

by breastfeeding among preschool children. There are several possible explanations for this association. First, breastfeeding mothers may be more in tune with their babies' needs because they are more closely connected to them physically and emotionally. Second, breastfeeding mothers are more likely to have a positive view of their babies' ability to self-regulate their eating habits.

Several studies have investigated the relationship between preschool children's F&V intake and their family's socioeconomic status and found that children from high-income families often have better access to fresh F&Vs, as their families can afford to buy a wide range of fresh vegetables [25,26]. This greater availability can have a favorable impact on a child's F&V consumption. However, in the present study, encouragement feeding was associated with increased F&V consumption when the monthly income was more than SAR 10,000, whereas the emotional feeding style increased fruit intake only. This is consistent with the findings of studies conducted by Lim et al. [26] and Mackenbach et al. [70], who indicated that children from high-income households were more likely to consume two servings of F&Vs/day (OR = 0.29, $p = 0.001$), while low-income individuals consumed fewer F&Vs daily. Nevertheless, higher income is not always associated with nutritious food intake. Raaijmakers et al. [71] reported a contrasting association between the instrumental feeding style and increased consumption of high-calorie foods such as candy (66.2%) and lower intake of healthy foods among high- and middle-income children.

Children who grew up with parents who consumed F&Vs were more likely to consume the required daily servings. One approach for increasing children's consumption of F&Vs is healthy parental role modeling [25,63,72].

Encouragement feeding was associated with increased daily consumption of F&Vs in children whose mothers met their daily requirements of F&V intake, encouraging children to follow a healthy diet by offering a variety of nutritious foods that stimulate their appetite and lead to an overall increase in their food consumption [25]. Increased consumption has also been observed in children who are frequently exposed to healthy foods, contributing to their acceptance of these foods [63,73].

This study has some limitations. First, the study design was cross-sectional; therefore, a causal relationship could not be established between the results. Second, a self-administered questionnaire was completed by the mothers, which exposes them to under-reporting F&V intake; there might be some situations where mothers inaccurately estimated their children's F&V consumption, such as when their children were in kindergarten or when they were at work. Third, findings from participants with higher education levels and household incomes might not represent the broader population accurately; thus, more studies need to be conducted among diverse social backgrounds. However, this does not diminish some important strengths of our study. This unique nationwide study included mothers from all regions of the KSA. The sample size was large, which increased the accuracy of the results and reduced bias. A well-adapted standardized instrument was used to assess PFS, thereby enhancing the accuracy of the data and the reliability of the results. Actual F&V consumption was measured using a previously validated and reliable method, thereby significantly reducing over- or under-estimation, which could have resulted from recall and self-reports. The age group studied is one of the strengths of this study, as preschool age is an essential developmental stage for adopting healthy eating habits. Using an electronic questionnaire allowed the participants to answer comfortably and honestly without feeling embarrassed. Furthermore, this study linked the data of both mothers and children, which was an additional strength of the study. Finally, the findings of this study could shape upcoming government policies and initiatives aimed at enhancing children's health.

5. Conclusions

The consumption of F&Vs among preschool children is almost satisfactory, indicating a healthy nutritional intake that reduces the risk of future chronic diseases. This aligns with the third goal of the SDGs, "Good Health and Well-being", which the KSA aims to

achieve for all residents by 2030. This study expands our understanding of the effect of PFS on F&V intake among preschoolers. Also explored were the impact of maternal education level, maternal employment status, family monthly income, breastfeeding duration, and maternal daily F&V intake on the association between PFS and children's F&V intake.

The results indicated that the most common feeding styles among Saudi mothers to increase F&V intake in preschool children included encouragement and emotional feeding, while the less commonly used styles included control and instrumental feeding.

The observations in this study are unique, highlighting significant gaps in knowledge that require additional investigation. Therefore, we recommend the following:

1. In recent times, a series of social developments have been observed with the entry of more women into the labor market in the KSA, causing other family members to be involved in the care of children, such as fathers and grandparents. Therefore, the role of fathers and grandparents in influencing children's eating behaviors within the Saudi family context warrants further investigation.
2. It has been reported that women use the encouragement feeding style, while men use the control feeding style; however, there have been shifts over time, demonstrating that parents might adapt their interactions to their children's growth [74]. Longitudinal research is required to investigate these changes in children's eating behaviors.
3. Saudi mothers traditionally use food as a reward to encourage desirable behaviors, i.e., emotional feeding [75]. However, in the present study, the primary PFS used to increase F&V intake in preschool children was the encouragement feeding style, especially among mothers with higher education levels and incomes. Therefore, there is a need to investigate the relationship between PFS and other socioeconomic classes to gain a more comprehensive understanding.
4. The eating patterns of preschoolers can differ substantially due to various factors, such as individual food preferences, cultural influences, family habits, socioeconomic status, and exposure to different foods and eating environments, and it is unclear whether they typically eat more fruit or more vegetables daily [56,63]. The current study observed a low daily fruit intake in preschool children. Therefore, more research on personal tastes, family food traditions, and cultural aspects is required to understand their roles in fruit consumption.
5. The study findings provide a foundation for implementing practical measures in the future. These insights enable the establishment of effective strategies, ensuring a comprehensive approach to address challenges and promote healthier lifestyles. By leveraging this understanding, concrete actions can be taken to facilitate positive dietary changes effectively.

Author Contributions: Conceptualization, H.H.A.-O.; methodology, H.H.A.-O.; formal analysis, A.A.A.-b. and H.H.A.-O.; investigation, H.H.A.-O. and A.A.A.-b.; writing—original draft preparation, A.A.A.-b.; writing—review and editing, H.H.A.-O., H.A.S.F. and A.A.A.-b.; visualization, H.H.A.-O.; supervision, H.H.A.-O.; funding acquisition, A.A.A.-b. and H.H.A.-O. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia (Grant number 4,462).

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and received local ethical approval from the Research Ethics Committee at King Faisal University (protocol code: EA000345, issued on 4 January 2022).

Informed Consent Statement: Informed consent was obtained from all participants of the study.

Data Availability Statement: The datasets used and analyzed in the current study are available from the corresponding authors upon reasonable request.

Acknowledgments: The authors would like to thank all the participants for their time and valuable contributions in conducting this study and appreciate all efforts that were extended to them, whether in questionnaire arbitration or data collection.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. United Nations. Goal 3—The SDGs and a Healthier 2030. Available online: <https://www.un.org/en/chronicle/article/goal-3-sdgs-and-healthier-2030> (accessed on 2 July 2023).
2. World Health Organization. Healthy Diet. Available online: <https://www.who.int/news-room/fact-sheets/detail/healthy-diet> (accessed on 25 May 2023).
3. Saudi Food and Drug Authority. Guideline for Child Nutrition. Available online: <https://sfda.gov.sa/sites/default/files/2022-12/Guideline-for-Children-Nutrition.pdf> (accessed on 28 December 2022).
4. World Health Organization. Increasing Fruit and Vegetable Consumption to Reduce the Risk of Non Communicable Diseases. e-Library of Evidence for Nutrition Actions (eLENA). Available online: www.who.int/elena/titles/fruit_vegetables_ncds/en/# (accessed on 28 December 2022).
5. United Nations Children’s Fund. Early Childhood Development. Available online: <https://www.unicef.org/ar/early-childhood-development> (accessed on 6 January 2023).
6. Center for Disease Control and Prevention. Vital Signs. Progress on Children Eating More Fruit, Not Vegetables. Available online: <https://www.cdc.gov/vitalsigns/fruit-vegetables/infographic.html> (accessed on 23 September 2022).
7. Our World Data. What Is Obesity and Who Is It Measured. Available online: <https://ourworldindata.org/obesity-definition> (accessed on 2 January 2023).
8. McCarthy, R.; Kehoe, L.; Flynn, A.; Walton, J. The role of fruit and vegetables in the diets of children in Europe: Current state of knowledge on dietary recommendations, intakes and contribution to energy and nutrient intakes. *Proc. Nutr. Soc.* **2020**, *79*, 479–486. [[CrossRef](#)] [[PubMed](#)]
9. Masento, N.A.; Dulay, K.M.; Harvey, K.; Bulgarelli, D.; Caputi, M.; Cerrato, G.; Molina, P.; Wojtkowska, K.; Pruszczak, D.; Barlińska, J.; et al. Parent, child, and environmental predictors of vegetable consumption in Italian, Polish, and British preschoolers. *Front. Nutr.* **2022**, *9*, 958245. [[CrossRef](#)] [[PubMed](#)]
10. National Health Service. 5 A Day Portion Sizes. Available online: <https://www.nhs.uk/live-well/eat-well/5-a-day/portion-size/> (accessed on 14 September 2023).
11. Ministry of Health, Saudi Arabia. The Healthy Food Palm. Available online: <https://www.moh.gov.sa/en/Ministry/MediaCenter/Publications/Documents/final%20english%20%20الكتاب%20العلمي%20إنجليزي.pdf> (accessed on 14 September 2023).
12. Bassul, C.; Corish, C.A.; Kearney, J.M. Associations between the home environment, feeding practices and children’s intakes of fruit, vegetables and confectionary/sugar-sweetened beverages. *Int. J. Environ. Res. Public Health* **2020**, *17*, 4837. [[CrossRef](#)] [[PubMed](#)]
13. Statista. Number of Portions of Fruit and Vegetables Consumed by Children Per Day in England 2018, by Gender. Available online: <https://www.statista.com/statistics/375574/children-fruit-and-vegetable-consumption-by-gender-in-england/> (accessed on 3 January 2023).
14. Huo, J.; Kuang, X.; Xi, Y.; Xiang, C.; Yong, C.; Liang, J.; Zou, H.; Lin, Q. Screen time and its association with vegetables, fruits, snacks and sugary sweetened beverages intake among Chinese preschool children in Changsha, Hunan province: A cross-sectional study. *Nutrients* **2022**, *14*, 4086. [[CrossRef](#)] [[PubMed](#)]
15. Jomaa, L.; Hwalla, N.; Chokor, F.A.Z.; Naja, F.; O’Neill, L.; Nasreddine, L. Food consumption patterns and nutrient intakes of infants and young children amidst the nutrition transition: The case of Lebanon. *Nutr. J.* **2022**, *21*, 34. [[CrossRef](#)] [[PubMed](#)]
16. Almaamary, S.; Al Shammakhi, S.; Alghamari, I.; Jabbour, J.; Al-Jawaldeh, A. Preschoolers’ and mothers dietary practices and compliance with the 24-h movement guidelines: Results of Oman’s national nutrition survey. *Int. J. Environ. Res. Public Health* **2021**, *18*, 8867. [[CrossRef](#)]
17. Al-Dlaigan, Y.H.; Al-Meedania, L.A.; Anil, S. The influence of frequently consumed beverages and snacks on dental erosion among preschool children in Saudi Arabia. *Nutr. J.* **2017**, *16*, 80. [[CrossRef](#)] [[PubMed](#)]
18. Groele, B.; Głabska, D.; Gutkowska, K.; Guzek, D. Mother-related determinants of children at-home fruit and vegetable dietary patterns in a polish national sample. *Sustainability* **2019**, *11*, 3398. [[CrossRef](#)]
19. Robson, S.M.; Couch, S.C.; Peugh, J.L.; Glanz, K.; Zhou, C.; Sallis, J.F.; Saelens, B.E. Parent diet quality and energy intake are related to child diet quality and energy intake. *J. Acad. Nutr. Diet.* **2016**, *116*, 984–990. [[CrossRef](#)]
20. Rashid, V.; Engberink, M.F.; Van Eijsden, M.; Nicolaou, M.; Dekker, L.H.; Verhoeff, A.P.; Weijs, P.J. Ethnicity and socioeconomic status are related to dietary patterns at age 5 in the Amsterdam born children and their development (ABCD) cohort. *BMC Public Health* **2018**, *18*, 115. [[CrossRef](#)]
21. Boelens, M.; Raat, H.; Wijtzes, A.I.; Schouten, G.M.; Windhorst, D.A.; Jansen, W. Associations of socioeconomic status indicators and migrant status with risk of a low vegetable and fruit consumption in children. *SSM Popul. Health* **2022**, *17*, 101039. [[CrossRef](#)] [[PubMed](#)]
22. Serasinghe, N.; Vepsäläinen, H.; Lehto, R.; Abdollahi, A.M.; Erkkola, M.; Roos, E.; Ray, C. Associations between socioeconomic status, home food availability, parental role-modeling, and children’s fruit and vegetable consumption: A mediation analysis. *BMC Public Health* **2023**, *23*, 1037. [[CrossRef](#)] [[PubMed](#)]

23. Camara, S.; de Lauzon-Guillain, B.; Heude, B.; Charles, M.A.; Botton, J.; Plancoulaine, S.; Forhan, A.; Saurel-Cubizolles, M.J.; Dargent-Molina, P.; Lioret, S. Multidimensionality of the relationship between social status and dietary patterns in early childhood: Longitudinal results from the French EDEN mother-child cohort. *Int. J. Behav. Nutr. Phys. Act.* **2015**, *12*, 122. [[CrossRef](#)] [[PubMed](#)]
24. Lee, H.A.; Hwang, H.J.; Oh, S.Y.; Park, E.A.; Cho, S.J.; Kim, H.S.; Park, H. Which diet-related behaviors in childhood influence a healthier dietary pattern? From the ewha birth and growth cohort. *Nutrients* **2016**, *9*, 4. [[CrossRef](#)] [[PubMed](#)]
25. Kähkönen, K.; Hujo, M.; Sandell, M.; Rönkä, A.; Lyytikäinen, A.; Nuutinen, O. Fruit and vegetable consumption among 3–5-year-old Finnish children and their parents: Is there an association? *Food Qual. Prefer.* **2020**, *82*, 103886. [[CrossRef](#)]
26. Lim, S.L.; Teoh, C.; Zhao, X.; Umareddy, I.; Grillo, V.; Singh, S.S.; Khouw, I. Attitudes & beliefs that influence healthy eating behaviours among mothers of young children in Singapore: A cross-sectional study. *Appetite* **2020**, *148*, 104555. [[PubMed](#)]
27. Möller, L.M.; de Hoog, M.L.; van Eijnsden, M.; Gemke, R.J.; Vrijkotte, T.G. Infant nutrition in relation to eating behaviour and fruit and vegetable intake at age 5 years. *Br. J. Nutr.* **2013**, *109*, 564–571. [[CrossRef](#)]
28. Soldateli, B.; Vigo, A.; Giugliani, E.R.J. Effect of pattern and duration of breastfeeding on the consumption of fruits and vegetables among preschool children. *PLoS ONE* **2016**, *11*, e0148357. [[CrossRef](#)]
29. Vaughn, A.E.; Martin, C.L.; Ward, D.S. What matters most—what parents model or what parents eat? *Appetite* **2018**, *126*, 102–107. [[CrossRef](#)]
30. Kidwell, K.M.; Tomaso, C.; Lundahl, A.; Nelson, T.D. Confirmatory factor analysis of the parental feeding style questionnaire with a preschool sample. *Eat. Weight Disord.* **2020**, *25*, 407–414. [[CrossRef](#)]
31. Draxten, M.; Fulkerson, J.A.; Friend, S.; Flattum, C.F.; Schow, R. Parental role modeling of fruits and vegetables at meals and snacks is associated with children’s adequate consumption. *Appetite* **2014**, *78*, 1–7. [[CrossRef](#)]
32. Inhulsen, M.B.M.; Mérelle, S.Y.; Renders, C.M. Parental feeding styles, young children’s fruit, vegetable, water and sugar-sweetened beverage consumption, and the moderating role of maternal education and ethnic background. *Public Health Nutr.* **2017**, *20*, 2124–2133. [[CrossRef](#)] [[PubMed](#)]
33. Harmancioğlu, B.; Kabaran, S. Food fussiness in children: Relationship with dietary diversity, eating behaviors, and parental feeding practices among 3-to 5-year-olds. *Top. Clin. Nutr.* **2023**, *38*, 2–16. [[CrossRef](#)]
34. Jayawardhana, B.G.M.S.; Seneviwickrama, K.L.M.D. Parental feeding styles of preschoolers in a semi-urban setting in Kurunegala district. In Proceedings of the 13th International Research Conference General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka, 15–16 October 2020; pp. 303–306.
35. Almarhoon, I.; Ramsay, S.; Fletcher, J.; Johnson, S. Saudi Arabian mothers’ child feeding practices, autonomy, and concern about child weight. *J. Food Nutr. Diet.* **2015**, *1*, 103. [[CrossRef](#)]
36. Al-Hamad, A.H.; Al-Naseeb, A.M.; Al-Assaf, M.S.; Al-Obaid, S.A.; Al-Abdulkarim, B.S.; Olszewski, P.K. Preliminary exploration of obesity-related eating behaviour patterns in a sample of Saudi preschoolers aged 2–6 years through the Children’s Eating Behaviour Questionnaire. *Nutrients* **2021**, *13*, 4156. [[CrossRef](#)] [[PubMed](#)]
37. Alsaidi, B.S.; Alshamrani, S.A.M.; Almeahadi, R.M.; Allhyani, N.S.; Aldajani, F.G.; Alomari, F.T.; Khaloufeh, H.M.Y.; Aldajani, H.G.; Alharbi, M.A.; AlLuhibi, A.A.; et al. Impact of parental beliefs and practices about child feeding and its impact on child weight in Makkah City, Saudi Arabia in 2021. *Ann. Rom. Soc. Cell Biol.* **2021**, *25*, 2402–2421.
38. X1-The General Authority for Statistics (GASat) Population in Kingdom by Gender, Age Group—Mid 2019 A.D. Available online: <https://www.stats.gov.sa/ar/1007-0> (accessed on 14 February 2022).
39. Hulley, S.B.; Cummings, S.R.; Browner, W.S.; Grady, D.G.; Newman, T.B. *Designing Clinical Research*, 4th ed.; Gaertner, R., Ed.; Lippincott Williams & Wilkins: Philadelphia, PA, USA, 2013.
40. Dusi, R.; Botelho, R.B.A.; Nakano, E.Y.; Queiroz, F.L.N.D.; Zandonadi, R.P. Division of Responsibility in Child Feeding and Eating Competence among Brazilian Caregivers. *Nutrients* **2023**, *15*, 2225. [[CrossRef](#)] [[PubMed](#)]
41. Nieri, T.; Zimmer, A.; Vaca, J.M.; Tovar, A.; Cheney, A. A systematic review of research on non-maternal caregivers’ feeding of children 0–3 Years. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14463. [[CrossRef](#)]
42. Wu, M.J.; Zhao, K.; Fils-Aime, F. Response rates of online surveys in published research: A meta-analysis. *Comput. Hum. Behav. Rep.* **2022**, *7*, 100206. [[CrossRef](#)]
43. Leighton, K.; Kardong-Edgren, S.; Schneidereith, T.; Foisy-Doll, C. Using Social Media and Snowball Sampling as an Alternative Recruitment Strategy for Research. *Clin. Simul. Nurs.* **2021**, *55*, 37–42. [[CrossRef](#)]
44. Chakona, G. Social circumstances and cultural beliefs influence maternal nutrition, breastfeeding and child feeding practices in South Africa. *Nutr. J.* **2020**, *19*, 47. [[CrossRef](#)]
45. Baran, J.; Weres, A.; Czenczek-Lewandowska, E.; uszczki, E.; Sobek, G.; Pitucha, G.; Leszczak, J.; Mazur, A. Early eating patterns and overweight and obesity in a sample of preschool children in South-East Poland. *Int. J. Environ. Res. Public Health* **2019**, *16*, 3064. [[CrossRef](#)] [[PubMed](#)]
46. Al-Otaibi, H.H. The pattern of fruit and vegetable consumption among Saudi university students. *Glob. J. Health Sci.* **2014**, *6*, 155. [[CrossRef](#)]
47. Alfreeh, L.; Alomar, S.; Aljuraiban, G.S. Association of diet quality with serum high-sensitivity C-reactive protein level and the adherence to the Saudi dietary guidelines among female college students. *J. King Saud Univ.-Sci.* **2022**, *34*, 101765. [[CrossRef](#)]
48. Wardle, J.; Sanderson, S.; Guthrie, C.A.; Rapoport, L.; Plomin, R. Parental feeding style and the inter-generational transmission of obesity risk. *Obes. Res.* **2002**, *10*, 453–462. [[CrossRef](#)]

49. Özçelik-Ersu, D.; Persil-Özkan, Ö. Association of the relationship between eating behavior, parental feeding style and body weight in children. *Prog. Nutr.* **2021**, *23*, e2021238.
50. Lo, K.; Cheung, C.; Lee, A.; Tam, W.W.; Keung, V. Associations between parental feeding styles and childhood eating habits: A survey of Hong Kong pre-school children. *PLoS ONE* **2015**, *10*, e0124753. [[CrossRef](#)] [[PubMed](#)]
51. Sousa, K.G.D.; Gavião, M.B.D.; Ultremari, N.D.F.; Chaves Júnior, S.D.C.; Barbosa, T.D.S. Translation, cross-cultural adaptation and psychometric properties of the parental feeding style questionnaire into Brazilian Portuguese language. *Pesqui. Bras. Odontopediatria Clínica Integr.* **2023**, *23*, e220011. [[CrossRef](#)]
52. Foster, E.; Bradley, J. Methodological considerations and future insights for 24-hour dietary recall assessment in children. *Nutr. Res.* **2018**, *51*, 1–11. [[CrossRef](#)]
53. Rodenburg, G.; Kremers, S.P.; Oenema, A.; van de Mheen, D. Associations of parental feeding styles with child snacking behaviour and weight in the context of general parenting. *Public Health Nutr.* **2014**, *17*, 960–969. [[CrossRef](#)]
54. Kunaratnam, K.; Halaki, M.; Wen, L.M.; Baur, L.A.; Flood, V.M. Mother–child dietary behaviours and their observed associations with socio-demographic factors: Findings from the Healthy Beginnings Trial. *Br. J. Nutr.* **2018**, *119*, 464–471. [[CrossRef](#)] [[PubMed](#)]
55. United Nations Children’s Fund. Children, Food and Nutrition. Available online: <https://www.unicef.org/media/60806/file/SOWC-2019.pdf> (accessed on 1 January 2023).
56. Burnett, A.J.; Worsley, A.; Lacy, K.E.; Lamb, K.E. Moderation of associations between maternal parenting styles and Australian pre-school children’s dietary intake by family structure and mother’s employment status. *Public Health Nutr.* **2019**, *22*, 997–1009. [[CrossRef](#)] [[PubMed](#)]
57. Dalimunthe, I.; Sembiring, T.; Evalina, R. Maternal visual perception of children’s nutritional status and feeding style. *Paediatr. Indones.* **2021**, *61*, 34–38. [[CrossRef](#)]
58. Fries, L.R.; Chan, M.J.; Quah, P.L.; Toh, J.Y.; Fogel, A.; Goh, A.T.; Aris, I.M.; Broekman, B.F.; Cai, S.; Tint, M.T.; et al. Maternal feeding practices and children’s food intake during an ad libitum buffet meal: Results from the GUSTO cohort. *Appetite* **2019**, *142*, 104371. [[CrossRef](#)] [[PubMed](#)]
59. Jahandarpour, S.; Davoodi, A. Mediation role of parental nutrition style in relation with parental coping strategies and pediatric obesity in Shiraz, 2019. *Iran. J. Diabetes Obes.* **2022**, *14*, 29–36. [[CrossRef](#)]
60. Shriver, L.H.; Hamm, E.W.; Buehler, C.A. Predictors of fruit and vegetable intake in low-income and racially diverse preschoolers: Does parental feeding style matter? *J. Public Health* **2019**, *27*, 407–418. [[CrossRef](#)]
61. Saxton, J.; Carnell, S.; Van Jaarsveld, C.H.; Wardle, J. Maternal education is associated with feeding style. *J. Am. Diet. Assoc.* **2009**, *109*, 894–898. [[CrossRef](#)] [[PubMed](#)]
62. Blissett, J.; Bennett, C.; Fogel, A.; Harris, G.; Higgs, S. Parental modelling and prompting effects on acceptance of a novel fruit in 2–4-year-old children are dependent on children’s food responsiveness. *Br. J. Nutr.* **2016**, *115*, 554–564. [[CrossRef](#)]
63. Kristiansen, A.L.; Bjelland, M.; Himerberg-Sundet, A.; Lien, N.; Andersen, L.F. Associations between physical home environmental factors and vegetable consumption among Norwegian 3–5-year-olds: The BRA-study. *Public Health Nutr.* **2017**, *20*, 1173–1183. [[CrossRef](#)]
64. Tsai, S.Y. Influence of partner support on an employed mother’s intention to breastfeed after returning to work. *Breastfeed Med.* **2014**, *9*, 222–230. [[CrossRef](#)]
65. Ogbo, F.A.; Eastwood, J.; Page, A.; Arora, A.; McKenzie, A.; Jalaludin, B.; Tennant, E.; Miller, E.; Kohlhoff, J.; Noble, J.; et al. Prevalence and determinants of cessation of exclusive breastfeeding in the early postnatal period in Sydney, Australia. *Int. Breastfeed J.* **2016**, *12*, 16. [[CrossRef](#)] [[PubMed](#)]
66. Rempel, L.A.; Rempel, J.K.; Moore, K.C. Relationships between types of father breastfeeding support and breastfeeding outcomes. *Matern. Child Nutr.* **2017**, *13*, e12337. [[CrossRef](#)] [[PubMed](#)]
67. Mennella, J.A.; Daniels, L.M.; Reiter, A.R. Learning to like vegetables during breastfeeding: A randomized clinical trial of lactating mothers and infants. *Am. J. Clin. Nutr.* **2017**, *106*, 67–76. [[CrossRef](#)] [[PubMed](#)]
68. Specht, I.O.; Rohde, J.F.; Olsen, N.J.; Heitmann, B.L. Duration of exclusive breastfeeding may be related to eating behaviour and dietary intake in obesity prone normal weight young children. *PLoS ONE* **2018**, *13*, e0200388. [[CrossRef](#)] [[PubMed](#)]
69. Hegazi, M.A.; Allebdi, M.; Almohammadi, M.; Alnafie, A.; Al-Hazmi, L.; Alyoubi, S. Factors associated with exclusive breastfeeding in relation to knowledge, attitude and practice of breastfeeding mothers in Rabigh community, Western Saudi Arabia. *World J. Pediatr.* **2019**, *15*, 601–609. [[CrossRef](#)] [[PubMed](#)]
70. Mackenbach, J.D.; Brage, S.; Forouhi, N.G.; Griffin, S.J.; Wareham, N.J.; Monsivais, P. Does the importance of dietary costs for fruit and vegetable intake vary by socioeconomic position? *Br. J. Nutr.* **2015**, *114*, 1464–1470. [[CrossRef](#)] [[PubMed](#)]
71. Raaijmakers, L.G.; Gevers, D.W.; Teuscher, D.; Kremers, S.P.; van Assema, P. Emotional and instrumental feeding practices of Dutch mothers regarding foods eaten between main meals. *BMC Public Health* **2014**, *14*, 171. [[CrossRef](#)] [[PubMed](#)]
72. Chen, B.; Kattelman, K.; Comstock, C.; McCormack, L.; Wey, H.; Meendering, J. Parenting styles, food parenting practices and dietary intakes of preschoolers. *Nutrients* **2021**, *13*, 3630. [[CrossRef](#)]
73. Yoghurt in Nutrition Initiative. A Healthy Home Food Environment for Healthy Eating Habits in Children. Available online: <https://www.yogurtinnutrition.com/a-healthy-home-food-environment-for-healthy-eating-habits-in-children/> (accessed on 8 January 2023).

74. Lozano-Casanova, M.; Gutierrez-Hervas, A.; Richart-Martinez, M.; Oliver-Roig, A.; Sospedra, I. Paternal feeding practices and styles: A systematic review. *Nutr. Rev.* **2023**, nuad090. [[CrossRef](#)]
75. Mosli, R.H.; Bakhsh, J.A.; Madani, N.A.; Sindi, A.F.; Barasheed, A.F.; Kutbi, H.A.; Al-Wassia, H.K. Indulgence and stress around feeding: Initial evidence from a qualitative study of Saudi mothers. *Appetite* **2019**, *138*, 242–251. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.