



# Social inequalities in meal skipping patterns among children and adolescents: The CASPIAN-V study

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## Abstract

**Background & Aim:** The appropriate meal consumption affects the children's and adolescents' health. Few studies have shown an association between the socioeconomic inequality and the eating behavior among children and adolescents. Therefore, the aim of this study was to assess the socioeconomic inequality in meal skipping patterns among children and adolescents.

**Materials & Methods:** The data were accessible through the fifth round of a school-based program in Iran in 2015. In this cross-sectional nationwide study, 14,286 students aged 7–18 years were selected via the multistage cluster sampling from 30 provinces of Iran. The Global School-based Health Survey validated questionnaire was used to assess the socioeconomic variables and meal consumption patterns among children and adolescents. Socioeconomic status (SES) was computed using

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principle component analysis method. Multivariate logistic regression analysis was used to assess the socioeconomic inequality in meal skipping patterns.

**Results:** The frequency of breakfast, lunch, and dinner skipping were 13.8% (95% CI: 13.3–14.5), 6.8% (95% CI: 6.4–7.2), and 7.5% (95% CI: 7.1–7.9), respectively. In multivariate model, living in a two-parent family compared to living in a single-parent family decreased the odds of breakfast skipping (OR: 0.53, 95% CI: 0.42–0.67). Low SES level was associated with higher odds of skipping breakfast (OR: 1.79, 95% CI: 1.50–2.14) and dinner (OR: 1.80, 95% CI: 1.42–2.28). Moreover, maternal illiteracy and unemployment were associated with skipping breakfast, lunch, and dinner (all *p* values < 0.05).

**Conclusion:** Some demographic and socioeconomic characteristics, such as maternal illiteracy and unemployment, low SES level, and living in a single-parent family were suggested as the main predictors of meal skipping patterns in children and adolescents.

#### KEYWORDS

adolescents, children, inequality, meal skipping, socioeconomic status

## 1 | INTRODUCTION

Healthy dietary habits in children and adolescents are formed by the family, school, and community.<sup>1</sup> One of the aspects of a healthy diet is the consumption of three meals.<sup>2</sup> Many studies have shown that a healthy diet improves the health condition of children and adolescents.<sup>3–5</sup> For example, breakfast consumption may enhance the cognitive function, test the grades, and increase school attendance.<sup>5</sup> In most countries, children and adolescents consist of a large part of the population. According to the World Health Organization (WHO), in 2003, adolescents were 19% of the entire world's population aged 10–19 years, with 84% of them living in developing countries.<sup>6</sup> According to the 2011 Population and Housing Census, 16.34% of Iranian population were 10 adolescents aged 10–19 years.<sup>7</sup>

Adolescence is a crucial period of life that can affect adulthood, based on the establishment of nutritional habits. In addition, breakfast is considered as one of the main portions of a daily meal, and its consumption is an important healthy lifestyle indicator. However, the period between dinner and breakfast usually is the most extended time without absorption of nutrients and energy; therefore, skipping breakfast can result in metabolic changes and may have a negative effect on cognitive performance.<sup>5</sup> Eating breakfast can prevent chronic diseases and may have some beneficial effects on the quality of diet. In contrast, skipping breakfast increases the risk of metabolic syndrome risk and may lead to cardiovascular diseases.<sup>8</sup> Breakfast plays a vital role in maintaining the health of children and adolescents.<sup>9</sup>

Skipping breakfast is reported from several countries, mainly in children and adolescents.<sup>10</sup> Some studies showed a correlation between skipping breakfast and occurrence of obesity.<sup>11,12</sup> Furthermore,

other studies showed that demographic characteristics including the parental education and household income levels can influence breakfast skipping.<sup>13,14</sup>

A systemic review conducted by Szajewska et al. (*n* = 57,481) showed that eating breakfast is closely connected to a reduced risk of obesity in children and adolescents in Europe.<sup>14</sup> Therefore, to improve the health of children and adolescents, it is important to identify the determinants of skipping meal, especially breakfast. Identification of these factors can help to make better intervention programs to promote eating daily breakfast. Several studies showed that environmental conditions can affect the dietary habits of children and adolescents. A previous study reported that skipping breakfast is more common in adolescents in low SES families.<sup>15–19</sup> Only a few studies have focused on the connection between skipping meal and socioeconomic position; moreover, these studies were conducted in high-income countries, with limited experience in developing countries. Therefore, the aim of this study was to assess the socioeconomic inequality in meal skipping patterns among children and adolescents.

## 2 | MATERIALS & METHODS

### 2.1 | Study design

The data were accessible through the fifth round of a school-based program entitled Childhood and Adolescence Surveillance and Prevention of Adult Non-Communicable Disease (CASPIAN-V) study in Iran. In this cross-sectional nationwide study, information was obtained from families living in 30 provinces of Iran. Further details on CASPIAN-V studies are available.<sup>20</sup>

The study protocol was approved by the ethical committee of Alborz University of Medical Sciences (Project number: 194049).

## 2.2 | Study population

In this school-based survey, students were selected via multistage stratified cluster sampling from 30 provinces of Iran in 2015. Stratification was performed in each province according to the residence area (urban/rural) and school grade (elementary/high school). Eligible schools were stratified according to the information bank of the Ministry of Education.

The sampling designed as proportional to size sampling with equal sex ratio and the ratio in urban and rural areas were proportionate to the population of urban and rural students. In each province, equal clusters were used to reach the necessary sample size. In each province, 48 clusters and at each cluster 10 sample units (students and their parents) and a total of 14,880 students and an equal number of their parents were selected from 30 provinces.

## 2.3 | Demographic information and family socioeconomic position

The questionnaire of the World Health Organization-Global School-based Student Health Survey (GSHS) was used to collect the demographic and socioeconomic characteristics. The questionnaire had already been translated into Persian, and validated; it included age, sex, living place (urban/rural), family size, maternal and paternal education (illiterate, a high school diploma or less and academic education), and maternal and paternal occupation (employed or unemployed), family composition (single parent or two parents), family assets, and dietary behaviors. Socioeconomic status (SES) was determined using principle component analysis (PCA) method. Variables including paternal education, occupation, possessing a car, school type (public/private), type of home (private/rented), and having a personal computer at home were summarized under one main component: SES(31). SES was categorized into five quintiles, from the first quintile, as the "lowest SES" group, to the fifth quintile, as the "highest SES" group.

## 2.4 | Meal skipping behaviors

According to the GSHS questionnaire, the consumption pattern of all three main meals was assessed by a single-item question. Students were asked to report "usually how many days in a week eat breakfast, dinner, and launch on weekdays and weekends?" Meal frequency was defined as skippers (eating

meals 0–4 days/week) and nonskippers (eating meals 5–7 days/week).

## 2.5 | Statistical analysis

Continuous and categorical variables were presented as mean with standard deviation and frequency with percentage, respectively. Frequency of meal skipping patterns was reported as percentage and the 95% confidence interval (CI). Frequency of skipping meal based on family and socio-demographic characteristics was assessed using the Chi-square test. Univariate and multivariate (adjusted) logistic regression analysis was used to assess the association of family and socio-demographic characteristics with meal skipping. All family and socio-demographic characteristics were included in the adjusted model using Enter method. Results of logistic regression analysis were reported as odds ratio and 95% CI. Statistical analysis was performed using SPSS version 16.0.

## 3 | RESULTS

Overall, 14,286 students completed the study (99% participation rate). Table 1 shows the family and socioeconomic characteristics of the study participants. Of 14,286 children and adolescents included in this study, 50.6% were boys, and 71.4% lived in urban areas. The majority of both fathers and mothers earned a high school diploma or less than diploma. Regarding occupation, 90.6% of the fathers were employed, while this number for mothers stood at 12.7%. Also, 93.5% (13,353) of the children and adolescents lived in a two-parent family.

The frequencies of skipping breakfast, lunch, and dinner were 13.8% (95% CI: 13.3–14.5), 6.8% (95% CI: 6.4–7.2), and 7.5% (95% CI: 7.1–7.9), respectively.

Skipping breakfast behavior was more prevalent among girls than boys (14.7% vs. 13.1%,  $p$ -value = 0.006), but no significant difference was observed between them in terms of lunch and dinner (both  $p$ -value > 0.05). Compared to students with unemployed mothers, a higher percentage of students with employed mothers reported not eating breakfast (16.4% vs. 13.5%), lunch (8.7% vs. 6.5%), and dinner (9.4% vs. 7.3%) (all  $p$ -value < 0.05). Family composition and family SES were significant elements in breakfast skipping; breakfast skipping was more prevalent among the students living in a single-parent family than those living in a two-parent family (20.0% vs. 13.5%,  $p$ -value < 0.001; Table 2).

Also, skipping breakfast and dinner behaviors were more frequent among students in families with low SES levels compared to their counterparts in families with mild and high SES (both  $p$ -value < 0.001; Table 2).

As shown in Table 2, no significant difference was observed in meal skipping behaviors between students with respect to the living

**TABLE 1** Family and socioeconomic characteristics of the study participants ( $n = 14,286$ )

Variable		Total n (%)	Missing n (%)
Age (year)		12.8 (3.1) <sup>a</sup>	12 (0.1)
Sex	Boy	7228 (50.6)	12 (0.1)
	Girl	7046 (49.3)	
Living area	Urban	10,194 (71.4)	12 (0.1)
	Rural	4080 (28.6)	
Family size	≤Four	6742 (47.2)	208 (1.5)
	>Four	7336 (51.4)	
Maternal educational level	Academic education	1524 (10.7)	114 (0.8)
	Diploma/under diploma	10,148 (71.0)	
	Illiterate	2500 (17.5)	
Paternal educational level	Academic education	1893 (13.3)	496 (3.5)
	Diploma/under diploma	10,163 (71.1)	
	Illiterate	1734 (12.1)	
Maternal occupation status	Employed	1814 (12.7)	47 (0.3)
	Unemployed	12,425 (87.0)	
Paternal occupation status	Employed	12,943 (90.6)	96 (0.7)
	Unemployed	1247 (8.7)	
Family composition	Two parents	13,352 (93.5)	98 (0.7)
	Single parent	836 (5.9)	
Family socioeconomic status	Low	4562 (31.9)	648 (4.5)
	Mid	4521 (31.6)	
	High	4555 (31.9)	
Breakfast skipping	No	12,167 (85.2)	154 (1.1)
	Yes	1965 (13.8)	
Lunch skipping	No	13,173 (92.2)	150 (1.0)
	Yes	963 (6.7)	
Dinner skipping	No	13,098 (91.7)	120 (0.8)
	Yes	1068 (7.5)	

<sup>a</sup>Are presented as mean (SD).

area (urban or rural), size of the family, and the parents' education level (all  $p$ -values > 0.05).

Tables 3–5 show the associations of family and socioeconomic characteristics with skipping breakfast, lunch, and dinner in univariate and multivariate (adjusted) logistic regression models.

In the multivariate analysis, living in a two-parent family compared to living in a single-parent family, decreased odds of skipping breakfast (adjusted OR: 0.53, 95% CI: 0.42–0.67). Besides, low SES level was significantly associated with higher odds of skipping breakfast (adj. OR: 1.79, 95% CI: 1.50–2.14) and dinner (adjusted OR, 95% CI: 1.80, 1.42–2.28).

Besides, having an illiterate or unemployed mother, both were indirectly associated with skipping breakfast, lunch, and dinner

(all  $p$  values < 0.05%). Age was significantly associated only with skipping dinner (adjusted OR: 1.06, 95% CI: 1.04–1.08).

## 4 | DISCUSSION

This study aimed to investigate the effects of socioeconomic factors on skipping meals. The identification of these factors can provide useful information to improve the health status of children and adolescents. In our study, which was conducted on 14,286 children and adolescents, the prevalence of skipping breakfast, lunch, and dinner was reported. Also, the association of SEP with skipping meals was examined. In the current study, the frequency of skipping breakfast

TABLE 2 Frequency of skipping meals according to family and socio-demographic characteristics in Iranian children and adolescents: the CASPIAN-V study

Variable	Breakfast skipping n (%)	p value	Lunch skipping n (%)	p value	Dinner skipping n (%)	p value
Sex						
Boy	939 (13.1)	<b>0.006</b>	476 (6.6)	0.437	513 (7.2)	0.080
Girl	1026 (14.7)		487 (7.0)		555 (7.9)	
Living area						
Urban	1426 (14.1)	0.189	690 (6.8)	0.838	784 (7.7)	0.141
Rural	539 (13.3)		273 (6.7)		284 (7.0)	
Family size						
≤Four	901 (13.5)	0.251	439 (6.6)	0.369	497 (7.4)	0.586
>Four	1033 (14.2)		506 (7.0)		557 (7.7)	
Maternal education level						
Academic	221 (14.7)	0.194	92 (6.1)	0.084	145 (9.5)	<b>0.005</b>
≤Diploma	1359 (13.5)		671 (6.7)		722 (7.2)	
Illiterate	364 (14.7)		191 (7.7)		190 (7.7)	
Paternal education level						
Academic	243 (13.0)	0.282	154 (8.2)	<b>0.008</b>	155 (8.2)	0.393
≤Diploma	1409 (14.0)		651 (6.5)		740 (7.3)	
Illiterate	254 (14.8)		133 (7.7)		127 (7.4)	
Maternal occupation status						
Employed	294 (16.4)	<b>0.001</b>	157 (8.7)	<b>0.001</b>	170 (9.4)	< <b>0.001</b>
Unemployed	1663 (13.5)		798 (6.5)		895 (7.3)	
Paternal occupation status						
Employed	1760 (13.7)	<b>0.018</b>	889 (6.9)	0.080	974 (7.6)	<b>0.004</b>
Unemployed	200 (16.2)		69 (5.6)		66 (5.4)	
Family composition						
Two parents	1786 (13.5)	< <b>0.001</b>	891 (6.7)	0.689	967 (7.3)	<b>0.023</b>
Single parent	165 (20.0)		58 (7.1)		78 (9.4)	
Family socioeconomic status						
Low	755 (16.7)	< <b>0.001</b>	321 (7.1)	0.502	375 (8.3)	<b>0.004</b>
Mid	564 (12.6)		290 (6.5)		292 (6.5)	
High	568 (12.6)		311 (6.9)		341 (7.5)	

Note: Values shown are mean (standard deviation) and p-value. Bold values denote statistical significance at the  $p < 0.05$  level.

**TABLE 3** Associations of demographic and socioeconomic characteristics with skipping breakfast in Iranian children and adolescents: the CASPIAN-V study

Variables		Crude model		Adjusted model <sup>a</sup>	
		OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value
Age (year)		1.00 (0.99–1.02)	0.345	1.00 (0.98–1.02)	0.554
Sex	Boy	0.87 (0.79–0.96)	<b>0.006</b>	0.91 (0.83–1.01)	0.088
	Girl	Reference	-	Reference	-
Living area	Urban	Reference	-	Reference	-
	Rural	0.93 (0.83–1.03)	0.189	0.93 (0.83–1.04)	0.214
Family size	≤Four	Reference	-	Reference	-
	>Four	1.05 (0.96–1.16)	0.251	0.95 (0.85–1.07)	0.437
Maternal educational level	Academic	Reference	-	Reference	-
	≤Diploma	0.91 (0.78–1.06)	0.234	0.82 (0.66–1.01)	0.062
	Illiterate	1.00 (0.83–1.20)	0.955	0.72 (0.55–0.94)	<b>0.017</b>
Paternal educational level	Academic	Reference	-	Reference	-
	≤Diploma	1.09 (0.94–1.26)	0.217	1.03 (0.86–1.24)	0.692
	Illiterate	1.16 (0.96–1.40)	0.117	0.86 (0.66–1.11)	0.260
Maternal occupation status	Employed	Reference	-	Reference	-
	Unemployed	0.80 (0.69–0.91)	<b>&lt;0.001</b>	0.81 (0.68–0.96)	<b>0.020</b>
Paternal occupation status	Employed	Reference	-	Reference	-
	Unemployed	1.21 (1.03–1.42)	<b>0.018</b>	0.99 (0.81–1.21)	0.974
Family composition	Two parents	0.62 (0.52–0.74)	<b>&lt;0.001</b>	0.53 (0.42–0.67)	<b>&lt;0.001</b>
	Single parent	Reference	-	Reference	-
Family socioeconomic status	Low	1.39 (1.23–1.56)	<b>&lt;0.001</b>	1.79 (1.50–2.14)	<b>&lt;0.001</b>
	Mid	1.00 (0.88–1.14)	0.919	1.12 (0.96–1.30)	0.132
	High	Reference	-	Reference	-

Note: Bold values denote statistical significance at the  $p < 0.05$  level.

<sup>a</sup>In the full model, all socioeconomic status variables are entered in the multiple logistic regression analyses.

was higher than that in some previous studies.<sup>19,21,22</sup> For instance, two studies conducted on Dutch children reported a lower prevalence of skipping breakfast (0%–4%).<sup>23,24</sup> In contrast, the prevalence was 13.8% in this study.

Moreover, the prevalence of skipping lunch and dinner was 6.7% and 7.5%, respectively. Regarding the SES, previous studies showed that skipping breakfast, lunch, and dinner was higher in low SES families.<sup>25–27</sup> Some studies conducted at Edinburg University, showed that skipping breakfast was more frequent among females than males; this difference might be due to some eating conditions as the daily consumption of sweet drinks, as well as snack type foods, such as crisps and sweets.<sup>28</sup>

In some other studies, it was observed that there was a relationship between a low SES and skipping breakfast among the Iranian population.<sup>8,29,30</sup> Also, breakfast consumption was higher in some cases, with better SES levels and higher educated parents. Van et al. mentioned that media use can lead to skipping meals.<sup>31</sup> Besides, most conducted studies did not evaluate the abovementioned data, while

other studies reported evidence of explained aspects of skipping breakfast in different cases.<sup>5,25,26</sup> Another study conducted in Iran found that snack consumption and skipping meals were frequent in Iranian pediatric population. They also observed that snack consumption was associated with skipping meals and its consequences in children and adolescents.<sup>32</sup>

A study in the United States indicated that skipping breakfast was a problem in the fourth-grade students from the different geographic settings.<sup>33</sup> In addition, some studies showed that children and adolescents might benefit from the implementation of breakfast programs.<sup>34</sup>

In the current study, the prevalence of skipping lunch and dinner was 6.7% and 7.5%, respectively. Regarding SES, previous studies showed that skipping breakfast, lunch, and dinner was higher in low SEP families.<sup>35–37</sup> Furthermore, Wijte et al. showed that maternal education, family composition, and household income levels were associated with skipping breakfast.<sup>19</sup> Other studies also showed that family composition was constantly associated with skipping

Variables		Crude model		Adjusted model <sup>a</sup>	
		OR (95% CI)	p value	OR (95% CI)	p value
Age		1.01 (0.97–1.02)	0.405	1.00 (0.98–1.02)	0.454
Sex	Boy	0.94 (0.83–1.08)	0.437	0.96 (0.83–1.10)	0.554
	Girl	Reference	-	Reference	-
Living area	Urban	Reference	-	Reference	-
	Rural	0.98 (0.85–1.13)	0.838	1.07 (0.91–1.25)	0.381
Family size	≤Four	Reference	-	Reference	-
	>Four	1.06 (0.93–1.21)	0.369	1.00 (0.86–1.17)	0.914
Maternal educational level	Academic	Reference	-	Reference	-
	≤Diploma	1.10 (0.88–1.38)	0.373	1.69 (1.26–2.26)	<0.001
	Illiterate	1.29 (1.00–1.68)	<b>0.047</b>	1.83 (1.25–2.67)	<b>0.002</b>
Paternal educational level	Academic	Reference	-	Reference	-
	≤Diploma	0.77 (0.64–0.93)	<b>0.007</b>	0.68 (0.54–0.86)	<b>0.001</b>
	Illiterate	0.93 (0.73–1.19)	0.608	0.80 (0.57–1.12)	0.205
Maternal occupation status	Employed	Reference	-	Reference	-
	Unemployed	0.72 (0.60–0.86)	< <b>0.001</b>	0.57 (0.46–0.72)	< <b>0.001</b>
Paternal occupation status	Employed	Reference	-	Reference	-
	Unemployed	0.79 (0.62–1.02)	0.081	0.65 (0.46–0.90)	0.010
Family composition	Two parents	0.94 (0.71–1.24)	0.689	0.99 (0.67–1.44)	0.958
	Single parent	Reference	-	Reference	-
Family socioeconomic status	Low	1.03 (0.88–1.22)	0.649	1.15 (0.89–1.49)	0.255
	Mid	0.94 (0.79–1.11)	0.475	1.05 (0.86–1.28)	0.614
	High	Reference	-	Reference	-

Note: Bold values denote statistical significance at the  $p < 0.05$  level.

<sup>a</sup>In the full model, all socioeconomic status variables are entered in the multiple logistic regression analyses.

TABLE 4 Associations of demographic and socioeconomic characteristics with skipping lunch in Iranian children and adolescents: the CASPIAN-V study

meals.<sup>38,39</sup> The current study showed that skipping meals was higher among children and adolescents with employed mothers and single parents.

Moreover, family composition and family SES were significant factors in skipping breakfast. The association between maternal education and skipping meals showed that skipping lunch is higher in children with illiterate mothers. All these studies showed that for improving the health status of children and adolescents and skipping reducing meals, changes should also be considered for families.

#### 4.1 | Study limitations and strengths

A major limitation of this study was the cross-sectional nature of the data. Moreover, data on skipping meals were obtained based on simple questionnaire of the WHO. Therefore, it is recommended that

future studies be used more detailed questionnaires. The strengths of this study were its novelty in a non-Western population, and studying a large nationally representative population.

## 5 | CONCLUSION

According to the current findings, the prevalence of skipping breakfast, lunch, and dinner was 13.8%, 6.7%, and 7.5%, respectively. Moreover, skipping meals was higher in a family with low SES. Maternal education, maternal occupation, and family composition were highly associated with meal skipping behaviors. In order to change the behavior of children and adolescents, the family situation should be a target. The results of this study can help the national health policies to improve the healthy eating behaviors, mainly in children and adolescents with lower SES, who are at a higher risk of meal skipping.

**TABLE 5** Associations of demographic and socioeconomic characteristics with skipping dinner in Iranian children and adolescents: the CASPIAN-V study

Variables		Crude model		Adjusted model <sup>a</sup>	
		OR (95% CI)	p value	OR (95% CI)	p value
Age (year)		1.05 (1.03–1.08)	<0.001	1.06 (1.04–1.08)	<0.001
Sex	Boy	0.89 (0.79–1.01)	0.080	0.89 (0.78–1.02)	0.102
	Girl	Reference	-	Reference	-
Living area	Urban	Reference	-	Reference	-
	Rural	0.90 (0.78–1.03)	0.141	0.95 (0.82–1.11)	0.576
Family size	≤Four	Reference	-	Reference	-
	>Four	1.03 (0.91–1.17)	0.586	0.91 (0.79–1.06)	0.249
Maternal educational level	Academic	Reference	-	Reference	-
	≤Diploma	0.73 (0.60–0.88)	<b>0.001</b>	0.72 (0.56–0.94)	<b>0.015</b>
	Illiterate	0.78 (0.62–0.98)	<b>0.039</b>	0.60 (0.42–0.84)	<b>0.004</b>
Paternal educational level	Academic	Reference	-	Reference	-
	≤Diploma	0.88 (0.73–1.05)	0.175	0.94 (0.75–1.18)	0.611
	Illiterate	0.88 (0.69–1.13)	0.339	0.86 (0.61–1.20)	0.387
Maternal occupation status	Employed	Reference	-	Reference	-
	Unemployed	0.75 (0.63–0.89)	<b>0.001</b>	0.74 (0.59–0.92)	<b>0.008</b>
Paternal occupation status	Employed	Reference	-	Reference	-
	Unemployed	0.69 (0.53–0.89)	<b>0.005</b>	0.42 (0.29–0.60)	< <b>0.001</b>
Family composition	Two parents	0.75 (0.59–0.96)	<b>0.023</b>	0.71 (0.51–0.98)	<b>0.042</b>
	Single parent	Reference	-	Reference	-
Family socioeconomic status	Low	1.11 (0.95–1.29)	0.162	1.80 (1.42–2.28)	<0.001
	Mid	0.85 (0.72–1.00)	0.055	1.07 (0.88–1.31)	0.466
	High	Reference	-	Reference	-

Note: Bold values denote statistical significance at the  $p < 0.05$  level.

<sup>a</sup>In the full model, all socioeconomic status variables are entered in the multiple logistic regression analyses.

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## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

## AUTHOR CONTRIBUTIONS

The concept of this study was proposed by **Mostafa Qorbani**, **Roya Kelishadi**, **Mohammad Esmaeil Motlagh**, and **Ramin Heshmat**. This study was designed by Mostafa Qorbani, Ramin Heshmat, Mohammad Esmaeil Motlagh, and Roya Kelishadi. Data collection or processing was done by Amir-masood Rafiemanzelat, Shirin Djalalinia, Kouros Nouri, Hadith Rastad, Dorsa Salimi, and Kimia Ghaderi. Analysis or interpretation was performed by Amir Kasaiean, Mostafa Qorbani, and Ali Sheidayi. Literature search was done by Shirin

Djalalinia and Amir-masood Rafiemanzelat. This study was written by Mostafa Qorbani, Amir-masood Rafiemanzelat, and Hadith Rastad. All authors read and approved the final.

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