

## Knowledge of Benefits and Diet Quality of Fruits and Vegetables Consumption among Parents and Caregivers of Under-Five children in Bayelsa State of Nigeria

Patricia T. Osunu<sup>1</sup>, Charles C. Ofili<sup>1</sup>, John E. Moyegbone<sup>2\*</sup>, Ezekiel U. Nwose<sup>1,3</sup>.

<sup>1</sup>Department of Public & Community Health, Novena University, Ogume, Delta State, Nigeria

<sup>2</sup>Department of Public Health, Wellspring University, Benin City, Edo State, Nigeria

<sup>3</sup>School of Health and Medical Sciences, University of Southern Queensland, Toowoomba, Australia.

DOI: <https://doi.org/10.52845/mcrr/2023/06-12-1>

**Abstract: Background:** Fruits and vegetables are important in the growth and development of children. Therefore, this study aims to assess the knowledge of the benefits and diet quality of fruits and vegetables among parents and caregivers of under-five-year-old children in Bayelsa State of Nigeria.

**Methods:** This research was a population-based survey among randomly selected 360 parents/caregivers of children aged 5 years and below in Bayelsa state, Nigeria. Data for this research was collected through face-to-face interviews using a structured questionnaire. The results were expressed as frequency and percentage, level of significance was calculated at confidence interval of 95% and  $P < 0.05$ .

**Results:** The majority of the respondents 355 (98.6%) were female with the age range 25-44 making 86.65% of the total population. The findings shows that 86.7% of the respondents knew the benefits of fruit and vegetable consumption. Furthermore, 40.8% and 43.6% of the respondents reported that the children in their care consumed fruits/fruit juice and vegetables once a week respectively.

**Conclusion:** Though parents and caregivers in Bayelsa state have good knowledge of the benefits of fruits and vegetables, they do not provide adequate fruits and vegetables for their children consumption. Therefore, health professionals should educate parents and caregivers of children about the quality of fruits and vegetables to be provided for their children.

### INTRODUCTION

Nutrition is the physiological process associated with the consumption and utilization of dietary components by living beings (World Health Organization, 2021). The process of nutrition includes the stages of food ingestion, digestion, absorption, transport, and metabolism of the nutrients present in food. The provision of sufficient nourishment is of utmost importance for promoting optimal physical and cognitive development in the early stages of life (Sinley & Albrecht, 2015). Adequate consumption of fruits and vegetables among children is an integral part of balanced nutrition to ensure the healthy growth and development of children (Tariku, 2016). However, the sufficient intake of fruits and vegetables among children largely depends on the knowledge of the benefits of fruits and vegetables possessed by their caregivers (Sinley & Albrecht, 2015; Smith et al., 2015). Nevertheless, it is imperative to ensure that the inclusion of fruits and vegetables in children's diets is accompanied by a sufficient quantity and quality of the fruits and vegetables to facilitate optimal growth and development in children, as well as to mitigate the risk of malnutrition (Ramsay et al., 2017).

Micronutrient malnutrition due to inadequate consumption of fruits and vegetables in children predisposes them to stunted growth, inadequate immunity, and the occurrence of diseases (Bantamen et al., 2014). Previous studies show that the quality of diet including the intake of fruits and vegetables among Nigerian children is often inadequate (Akorede & Abiola, 2013; Awoyemi et al., 2012). Due to the gap identified in the knowledge and practice of providing adequate and quality fruits and vegetables to the children,

this study therefore, seeks to explore the Knowledge of the benefits and diet quality of fruits and vegetables consumption among parents and caregivers of under-five years old children in Yenagoa Bayelsa State of Nigeria.

### MATERIALS AND METHODS

#### *Study design and Study population:*

The study was a descriptive cross-sectional study of vegetable consumption among parents and caregivers of children aged 5 years and below. Parents and caregivers were randomly selected from Primary Healthcare Care facilities and Nursery schools were randomly selected across 8 Local Government Areas in Bayelsa State.

#### *Study Area:*

Bayelsa is a Nigerian state situated in the central part of the Niger Delta, South South geopolitical zone, with Yenagoa serving as the state headquarters (Nigeria city Population, 2022). The State's total area measures 10,773 square kilometres (4,159 sq miles). The state consists of eight local government districts and has a population of 2,537,400. The region is susceptible to flooding as a result of the inherent terrain and oil spillage caused by accelerated anthropogenic activities (Nigeria city Population, 2022).

#### *Sample size:*

The minimal sample size for this research was calculated using the single proportion formula (Das et al., 2016).

$$n = \frac{Z^2 pq}{e^2}$$

With;

n = sample size desired (when population is >10,000)

Z = the abscissa of a normal curve that cuts off the area- $\alpha$  at the tails (1 -  $\alpha$  equals

the desired confidence level, e.g., 95%) which is 1.96.

e = the desired level of precision (degree of accuracy) which is 5% (0.05)

p = the estimated proportion of an attribute that is present in the population which is taken as 71% i.e 0.71 (Umallawala et al., 2022)

Minimum sample size (n) = 316 Participants. Thus, the sample size for this research was 360 mothers and caregivers of children aged 5 years and below.

**Sampling techniques:**

A sample size of 360 parents and carers of children aged 5 years and below was randomly chosen from the 8 local government areas in Bayelsa state. In the first stage, one ward was randomly chosen from each of the eight Local Government Areas of the state. In the second stage, one (1) primary healthcare facilities and one (1) Nursery school were chosen at random from each of the eight selected wards. In the third stage, 23 participants were recruited from each of the eight (8) primary healthcare facilities and eight (8) Nursery school resulting in a total of 360 research participants for the study.

**Method of data collection:**

The research data were collected using self-administered questionnaires among the 360 research participants. Participants (N=360) included nursery school and primary healthcare workers, and parents from the 8 local government areas in Bayelsa state. The survey questionnaire combined closed-ended Likert-scaled and open-ended questions. Part A focused on the respondent's demographic variables while Part B focused on the knowledge of the benefits and diet

quality of fruits and vegetables among parents and caregivers of children in Yenagoa Bayelsa State of Nigeria.

**Method of Data Analysis:**

Data collected we reanalyzed using descriptive statistics on Excel and IBM SPSS version 27. The results were expressed as frequency and percentage, level of significance was calculated at confidence interval of 95% and P<0.05.

**RESULTS**

In Table 1, 98.6% of the research respondents were women while only 1.4% were men. The age group with the largest percentage of participants was the age group 25 to 34 years, comprising 44.5% of the total respondents followed by the age group 35-44 years (42.2%).The majority of the participants were married (54.2%), while 37.2% were single mothers. In terms of ethnic group, the majority of the respondents were Ijaw (85.8%), while the minority comprised Igbos (10%), Deltans (2.53%), and Akwa Iboms (1.67%). The educational attainment of the participants showed that most of the respondents (83.3%) were graduates while 12.8% were secondary school leavers. On occupational distribution, 34.7% of the respondents were artisans, 27.2% were into business, and only 3.8% were civil servants. Respondent's income distribution per month in Naira showed that 17.8% earn less than ₦50,000, while 41.1% of the respondents earn between ₦51,000-₦79,000, and only 9.1 % of the respondents earn above ₦110,000.The under-five years children of the respondents showed that 14.2 % of the children were 1 year old, 24.2% were 3 years, and, 22.2% were 4 years old.

**Table 1 Sociodemographic variables of respondents**

Variables	Options	Frequency (N=360)	Percentage (%)
Sex	Male	5	1.4
	Female	355	98.6
Age	less than 15	5	1.39
	15 – 24	11	3.06
	25– 34	160	44.4
	35 – 44	152	42.25
	45- 54	17	4.8
	55 – 64	13	3.6
	Above 64	2	0.5
Marital status	Single	134	37.2
	Married	195	54.2
	Divorced	27	7.5
	Widowed	4	1.1
Ethnic group	Akwa Iboms	6	1.67
	Deltans	9	2.53
	Igbos	36	10
	Ijaws	309	85.8
Educational level	SSCE	46	12.8
	Undergraduate	14	3.8
	Graduate	300	83.4
Occupational Status	Business	98	27.26
	Civil	14	3.8
	Artisan	125	34.8
	menial work	67	18.61
	Private sector	56	15.5

<b>Level of Income (₦)</b>	less than 50,000	64	17.7
	51,000 -79,000	148	41.1
	80,000 -109,000	115	31.9
	110,000 -129,000	14	3.9
	130,000 -159,000	12	3.63
	160,000 -199,000	6	1.8
	Above 200,000	1	0.27
<b>Age of respondents' children</b>	1 year	51	14.2
	2 years	67	18.6
	3 years	87	24.2
	4 years	80	22.2
	5 years	75	20.8

Figure 1 shows that the majority of the participants 312 (86.7%) responded ‘Yes’ that fruit and vegetables are a necessary part of the diet while 22 (6.1%) do not think that

fruit and vegetables are a necessary part of the diet and 26 (7.2%) were unsure about the necessity of fruit in the diet.

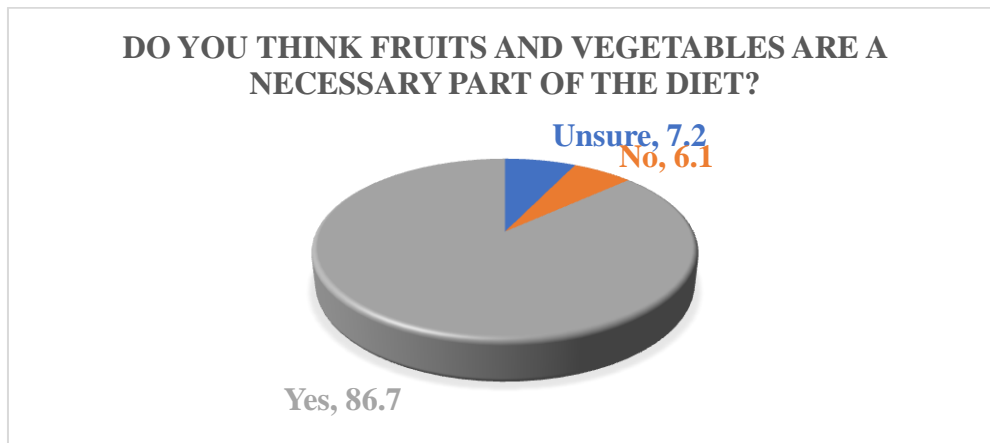


Figure 1: Knowledge of benefits fruit and vegetable consumption among respondents

Figure 2 shows that majority 147 (40.8%) and 108 (30.0%) of the respondents reported that the children in their care take fruits/fruit juice once and twice a week respectively.

Only 40 (11.1%) of children were reported to consume fruit 7 times in a week.

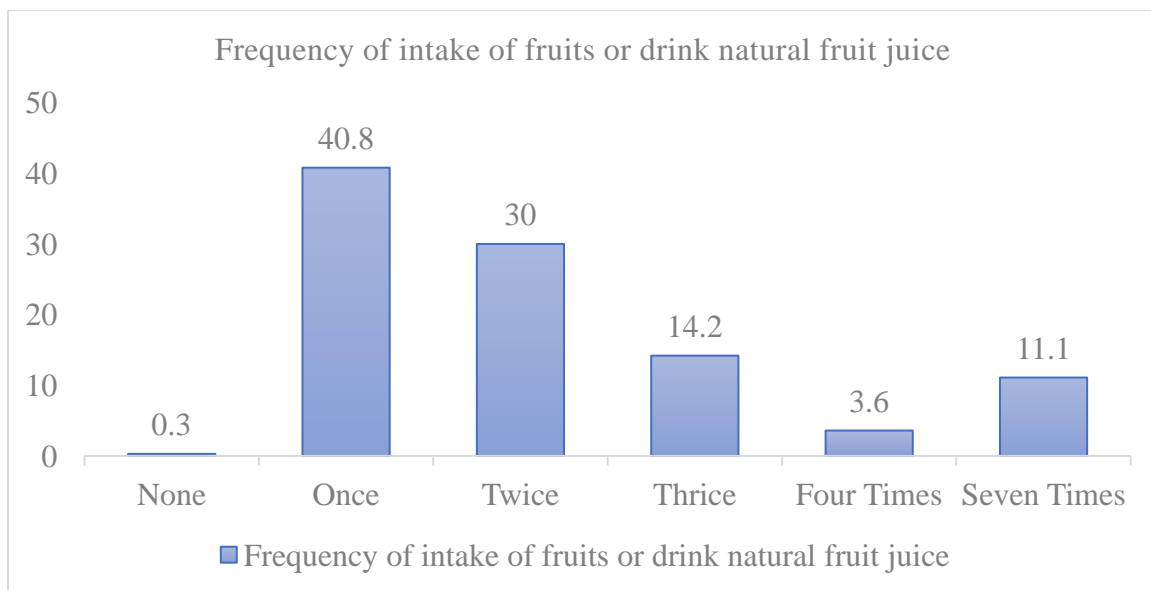


Figure 2: Frequency of intake of fruits or natural fruit juice

Figure 3 shows that majority 157 (43.6%) and 112 (31.1%) of the respondents reported that the children in their care consumed vegetables once and twice a week respectively.

Only 40 (11.1%) of children were reported to consume vegetables 7 times in a week.

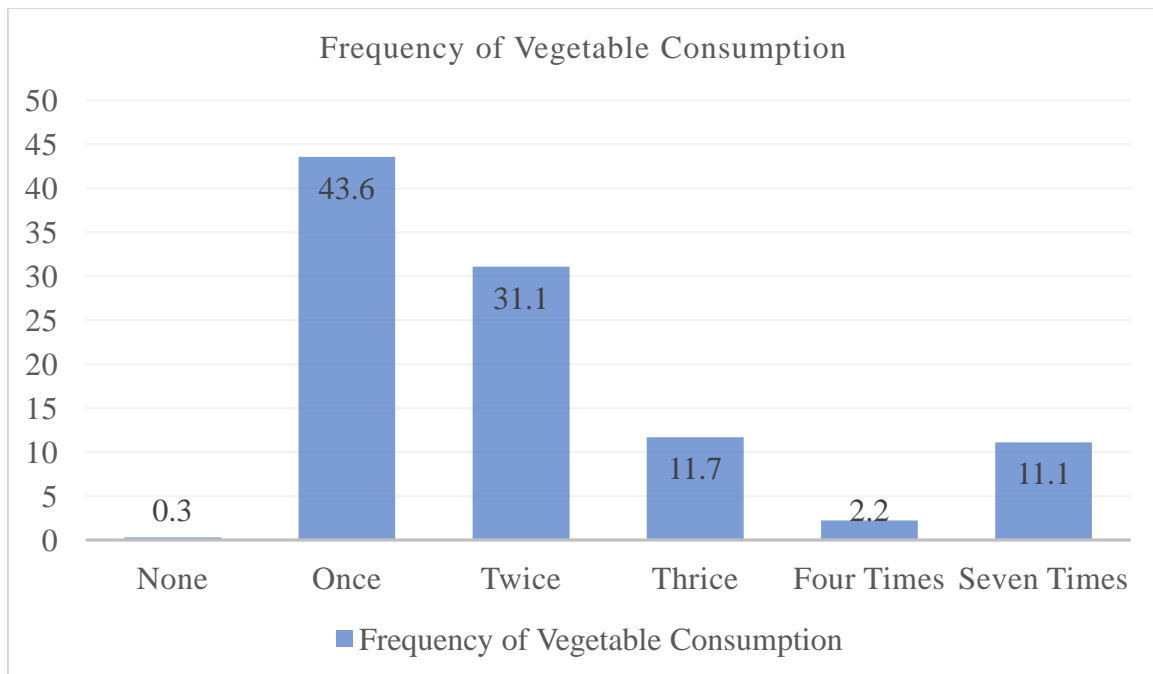


Figure 3: Frequency of Vegetable Consumption

## DISCUSSION

The findings of this study demonstrate that 86.7% of the respondents knew the benefits of fruit and vegetable consumption. This finding is in line with the findings of the research that was carried out by a research team in Nigeria which highlights the fact that individuals exhibit a high level of knowledge and awareness of the benefits of fruits and vegetables in the dietary intake (Adesuyi et al., 2022).

According to another research, the knowledge of the benefits of fruits and vegetables is important for parents and caregivers of young children because adequate consumption of fruits and vegetables enhances the promotion of holistic body growth and development, the strengthening of skeletal structure, the enhancement of immune system function, the provision of essential vitamins, the promotion of cardiovascular health, the facilitation of digestion, the prevention of chronic ailments, the enhancement of physical prowess, the advancement of gastrointestinal health, and the contribution to overall bodily wellness.(Tariku, 2016)This also aligns with the findings of other studies that submitted that the knowledge of the benefits of fruits and vegetables will ensure that the parents give their children adequate quantities of fruits and vegetables to promote immunity, strengthen the skeletal system, and promote cardiovascular health. (Asgary et al., 2015; Smith et al., 2015)

The findings of this study show that the majority 40.8% and 30.0% of the respondents reported that the children in their care consumed fruits/fruit juice once and twice a week respectively. While 43.6% and 31.1% consumed vegetables once and twice a week respectively. This shows that the quality of fruit and vegetables that the children consume is insufficient. Studies have shown that children who incorporate a larger range of fruit and vegetable categories into their food intake exhibit increased overall diet quality, which exerts a beneficial influence on their growth, development, and disease prevention. (Kabwama et al.,

2019; Savoie-Roskos et al., 2017; Yannakoulia et al., 2016)National guidelines from different countries including Nigerian national guidelines for nutrition place emphasis on the consumption of the recommended quantities of fruits and vegetables among children.(Akinyele et al., 2002; Food and Agriculture Organization of the United Nations, 2023; The United States Agency for International Development, 2017)However, it has been found that mothers and other caregivers frequently do not provide their children with a nutritionally balanced diet because they do not incorporate enough fruits and vegetables into the children’s diet with reasons due to poor socioeconomic status. (Akorede & Abiola, 2013; Briend et al., 2015; De & Chattopadhyay, 2019; Okogba et al., 2023) Studies show that parents and other caretakers typically place a higher priority on feeding their children with staple foods, which mostly consist of carbohydrates because it is cheaper for them, while often neglecting the significance of providing their children with fruits and vegetables. The failure of parents and caregivers to provide sufficient quantities of fruits and vegetables for their children was attributed to low socioeconomic status and low purchasing power of their parents and caregivers. (De & Chattopadhyay, 2019; Kabwama et al., 2019)

## CONCLUSION

This study shows that parents and caregivers in Bayelsa state have good knowledge of the benefits of adequate consumption of fruits and vegetables. This knowledge does not translate to practice because majority of the respondents (70%) feed their children at most twice a week with fruits and vegetable. Therefore, health professionals is encouraged to effectively disseminate health-related information to mothers about the benefits associated with incorporating fruits and vegetables into their children's dietary habits and follow up on the practices as well.

## ACKNOWLEDGEMENTS

We are thankful to everyone that supports and encouraged us in the course of this study.

## ETHICAL CONSIDERATIONS

This study received ethical permission from the research and ethics committee of Novena University, Ogume, Delta State. Authorization was obtained from the chairpersons of the Local Government Councils and the Medical Officers for Health. All participants provided informed consent following a thorough description of the study method, with the guarantee that the acquired information would be kept confidential.

## DECLARATION OF CONFLICTING INTERESTS

Authors have declared that no conflicting interests exist.

## FUNDING

The authors received no financial support for the research, authorship, and/or publication of this article.

## REFERENCES

- [1]. Adesuyi, O., Kioko, U., & Oleche, M. (2022). Socio-Economic Disparities in Under-Five Child Malnutrition in Nigeria. *Global Journal of Health Science*, 13(9), 1-76.
- [2]. Akinyele, I., Maziya-Dixon, B., Ajayi, O., Aminu, F., Oguntona, E., Omotola, B., Adams, L., & Sanusi, R. (2002). "Profile: Nutrition for National Development in Nigeria: A Call for Action. Advocacy Tool Developed on the Consequences of Malnutrition in Nigeria." FGN/USAID. In *Global food politics and approaches to sustainable consumption: Emerging research and opportunities* (pp. 78–100). IGI Global.
- [3]. Akorede, Q., & Abiola, O. (2013). Assessment of the nutritional status of under-five children in Akure South Local Government, Ondo State, Nigeria. *International Journal of Research and Reviews in Applied Sciences*, 14(3), 671–681.
- [4]. Asgary, R., Liu, M., Naderi, R., Grigoryan, Z., & Malachovsky, M. (2015). Malnutrition prevalence and nutrition barriers in children under 5 years: a mixed methods study in Madagascar. *International Health*, 7(6), 426–432.
- [5]. Awoyemi, T., Odozi, J., & Ogunmiyi, A. (2012). Environmental and socio-economic correlates of child malnutrition in Iseyin area of Oyo State, Nigeria. *Food and Public Health*, 2(4), 92–98.
- [6]. Bantamen, G., Belaynew, W., & Dube, J. (2014). Assessment of Factors Associated with Malnutrition among Under Five Years Age Children at Machakel Woreda, Northwest Ethiopia: A Case Control Study. *Journal of Nutrition and Food Science*, 1(4), 256–270.
- [7]. Briend, A., Khara, T., & Dolan, C. (2015). Wasting and stunting – similarities and differences: policy and programmatic implications. *Food and Nutrition Bulletin*, 36(1), 15–23.
- [8]. Das, S., Mitra, K., & Mandal, M. (2016). Sample size calculation: Basic principles. *Indian Journal of Anaesthesia*, 60(9), 652.
- [9]. De, P., & Chattopadhyay, N. (2019). Effects of malnutrition on child development: Evidence from a backward district of India. *Clinical Epidemiology and Global Health*, 7(3), 439–445.
- [10]. Food and Agriculture Organization of the United Nations. (2023). Food-based dietary guidelines-Nigeria. Available at <https://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/nigeria/en/>. [https://pdf.usaid.gov/pdf\\_docs/PA00SXFW.Pdf](https://pdf.usaid.gov/pdf_docs/PA00SXFW.Pdf). Accessed November 23, 2023.
- [11]. Kabwama, S., Bahendeka, S., Wesonga, R., Mutungi, G., & Guwatudde, D. (2019). Low consumption of fruits and vegetables among adults in Uganda: findings from a countrywide cross-sectional survey. *Archives of Public Health*, 77, 1–8.
- [12]. Nigeria city Population. (2022). Nigeria population. Available at [https://citypopulation.de/en/nigeria/admin/nga006\\_bayelsa/](https://citypopulation.de/en/nigeria/admin/nga006_bayelsa/). Accessed November, 29, 202.
- [13]. Okogba, L. E., Moyegbone, J. E., & Adjene, J. O. (2023). Pattern of Vegetable Consumption among Pregnant Women Attending Primary Health Care Facilities in Patani Local Government Area of Delta State, Nigeria. *European Journal of Nutrition & Food Safety*, 15(11), 98–108. <https://doi.org/10.9734/EJNFS/2023/v15i111358>
- [14]. Ramsay, S., Shriver, L., & Taylor, C. (2017). The variety of fruits and vegetables is related to preschoolers' overall diet quality. *Preventive Medicine Reports*, 5, 112–117.
- [15]. Savoie-Roskos, M., Wengreen, H., & Durward, C. (2017). Increasing fruit and vegetable intake among children and youth through gardening-based interventions: a systematic review. *Journal of the Academy of Nutrition and Dietetics*, 117(2), 240–250.
- [16]. Sinley, R., & Albrecht, J. (2015). Fruit and vegetable perceptions among caregivers of American Indian toddlers and community stakeholders: a qualitative study. *Journal of Racial and Ethnic Health Disparities*, 2, 341–350.
- [17]. Smith, L., Ruel, M., & Ndiaye, A. (2015). Why is child malnutrition lower in urban than in rural areas? Evidence from 36 developing countries. *World Development*, 33(2), 1285–1305.
- [18]. Tariku, A. (2016). Undernutrition and associated factors among children aged 6-59 months in east Belesa District, Northwest Ethiopia: A community-based cross-sectional study. *BioMed Central Public Health*, 16(506), 1–10.
- [19]. The United States Agency for International Development. (2017). Nutritional guidelines. Available at [https://pdf.usaid.gov/pdf\\_docs/PA00SXFW.Pdf](https://pdf.usaid.gov/pdf_docs/PA00SXFW.Pdf). Accessed November 23, 2023.
- [20]. Umallowala, T., Shah, P., Puwar, T., Saha, S., & Pandya, A. (2022). Food Consumption Pattern and Dietary Diversity Among Pregnant and Lactating Women, Children, and Adolescent Girls in Devbhumi Dwarka District, Gujarat: A Cross-Sectional Study. *Cureus*, 14(8), 4–11.
- [21]. World Health Organization. (2021). Nutrition. *WHO, Geneva*. Available at [https://www.who.int/health-topics/nutrition#tab=tab\\_1](https://www.who.int/health-topics/nutrition#tab=tab_1). Accessed November 22, 2023.
- [22]. Yannakoulia, M., Lykou, A., Kastorini, C., Papasaranti, E., Petralias, A., Veloudaki, A., Linos, A., & DIATROFI Program Research Team. (2016). Socio-economic and lifestyle parameters associated with diet quality of children and adolescents using classification and regression tree analysis: the DIATROFI study. *Public Health Nutrition*, 19(2), 339–347.