ORIGINAL ARTICLE

Influence of electronic media on food choices of schoolchildren and adolescents in Luanda, Angola

Olineid Amenence de Oliveira *[ID], Marli Stela Santana [ID]

Catholic University of Angola. Faculty of Humanities. Interdisciplinary Center for Studies and Research, Cientific Initiation Program Av. Pedro de Castro Van-Dunem Loy, n° 24, Luanda, Angola.
olineiddeoliveira@gmail.com / marli.santana@ucan.edu

ABSTRACT

Background: Malnutrition in Angola has reached a prevalence of 17.3 %. On the other hand, the prevalence of childhood obesity is 2.4 %. There has been a food transition in Sub-Saharan Africa, and 28% of consumers obtain their products under the influence of advertising, which influences the infant and youth public. **Aims:** This research aims to verify the influence of electronic media on the food choices of schoolchildren and adolescents in Luanda province, Angola. **Subjects and Methods:** A cross-sectional and descriptive study was conducted, involving 268 students aged 8 to 17 years, in Luanda province, Angola. **Results:** There was a predominance of overweight (15.25 %) and obesity (7.2 %) among children, with a predominance of underweight among adolescents (9.37 %). There was a statistically significant association between BMI, the desire to consume foods previously seen on television (TV) (p = 0.03), and the habit of ingesting nutritionally inadequate foods in front of the TV (p = 0.01). **Conclusions:** Overweight and underweight coexist among the surveyed students. The constant consumption of food in front of media devices may drive the excessive intake of foods considered nutritionally inadequate, affecting the nutritional status of children and adolescents.

Keywords: Influence of electronic media; nutritional status of children, malnutrition; underweight; overweight.

1 Introduction

Eating behavior can be defined as a set of actions related to food, from its choice to its ingestion [1]. Eating habit [2], an expression used to designate a set of habitual foods in the diet of groups or populations is formed already in childhood and determined by internal and external factors to the individual, such as taste, post-eating events, and social context [3].

Children develop critical thinking about their own food choices from the age of seven, a phase in which they tend to spend many hours away from home, and are subject to behavioral influences outside the family environment [4]. Adolescents, on the other hand, tend to be more independent in making decisions about the food they eat and may have their health impacted by irregular consumption of meals and/or excessive fast food, eating out of home, fad diets, and restriction of meals [5].

Eating family meals routine has an impact on the Body Mass Index (BMI), when this routine is of good quality, it has a positive impact on both children and adolescents [6] considering that they are influenced by the family environment, as well as by social trends, friends, and media [7, 8], and such eating practices tend to solidify in adulthood.

African continent has been experiencing very rapid growth of malnourished people, which results from recurring hunger and food insecurity. By the year 2019, the continent presented more than 250 million malnourished people according to the United Nations (UN) [9].

13

Nor. Afr. J. Food Nutr. Res. • Volume 7 • Issue 16 • 2023

In 2019, the prevalence of malnutrition in Angola was estimated at 17.3 % [10]. On the other hand, data from the World Health Organization (WHO) observatory reveal a prevalence of obesity in Angola of 2.4 % in individuals aged 5 - 19 years of age [11].

Child and adolescent's overweight has become a global public health challenge [12], present not only in developed countries but widely increasing in urban areas of middle- and low-income countries, including sub-Saharan African countries [13, 14], due to several factors, such as increased consumption of processed and sugary foods [15] and exposure to media [16].

In Sub-Saharan Africa, 28 % of consumers make their purchases under the strong influence of advertising [17]. Advertising exposure has effects on children's cognitive component [18], which suggests that warning messages about the harmful health effects of certain foods do not reduce the preference or intention to consume those foods.

By 2012 [17], the print and online media in Angola reached 78 % and 44 % of the population respectively, while in other Sub-Saharan African populations, it was 46 % and 25 %. Mobile phone subscriptions per 100 inhabitants in Angolan population decreased [19] to 44.6 % in 2020 compared to the previous year (46.6 %).

In South Africa, individuals under 18 years of age spend 14 hours a day in front of the TV, and the percentage of food advertisements in this period of time is 30 % [20]. On average, the frequency of food advertisements broadcast on each TV channel is 4.6 every 4 hours, 0.7 every 1 hour for allowed foods, and 2.7 every 3 hours for non-allowed foods [20].

According to data from the National Statistics Institute (INE)[21], 51.2 % of Angolan families have a TV SET at home, of which 76 % of men and 65 % of women aged 15 to 49 watch TV at least once a week. 62.7 % have a mobile phone and only 12.6 % have a computer, of which 65 % of men and 54 % of women aged 15 to 49 use the Internet every day.

However, this background with a scenario full of stimuli and changes in eating patterns, as well as in the nutritional picture, contrasts with the scarcity of data on Angolan eating practice, when the need arose for a study with the objective of verifying the Influence of electronic media on food choices of Schoolchildren and adolescents in Luanda, Angola.

2   Subjects and Methods

2.1 Study context

A cross-sectional and descriptive study was conducted from August to November 2019, in which 268 students from the 3rd to the 9th grade of the general education system, aged 8 – 17 years, from three school complexes in Luanda province, have participated.

Namely the Complexo Escolar Maristas - Cristo Rei, located in the municipality of Luanda - Maianga district, 1º de Maio neighborhood; the Complexo Escolar do Cazenga (School 3048 and Liceu 3049), located in the municipality of Cazenga - Cazenga district, Tala-Hady neighborhood; and the Complexo Escolar Kibangas, located in the municipality of Luanda - Rangel district, Vila Alice neighborhood.

2.2 Sample Calculation and Selection

For the Sample calculation, a frequency of 24% of overweight children was considered [22], with a Confidence Interval (CI) of 95 % and a margin of error of 5 %. An additional 20 % was made over the total sample [23]. And the n-sample was defined with a minimum of 250 students, which for safety reasons, taking into account the losses verified during the pilot project, the sample was extrapolated to another 57 students, adding 307, of which 39 were excluded due to ambiguity in the answers and unprecedented questions left blank, making a total of 268 students. The age groups were defined according to the WHO criteria [24]. Students with some type of physical or mental disability were excluded, as the aim was to obtain a homogeneous sample, according to the anthropometric, environmental and socio-cultural variables of people outside these conditions.

2.3 Data collection and tools

After having formal permission to conduct the study from the three schools, data collection began, which lasted from August to November 2019. After the consent of the parents and/or legal guardians and the consent of the students, a questionnaire with 19 questions on food choices and exposure to media was applied, as well as the use of anthropometric parameters.

The questionnaire was validated to allow for adjustments, which included removing irrelevant information, in a pilot study conducted with 20 students prior to the main study process. The questionnaire was completed in Angolan Portuguese, in a maximum time of 15 minutes.

For weight measurement, we used a standard portable digital scale with 100 g accuracy from the *My Glass Electronic Personal Scale*®, on which each student was positioned barefoot, without objects in the pockets, with the weight distributed on both feet, supported on the scale platform, keeping still with the head and the gaze in the frontal direction, then we read the result and recorded it. To measure height, a ruler sticker was affixed to a smooth wall, in front of which each student, still barefoot, was positioned standing, highlighting the five points (heels, calves, buttocks, clavicle, and occipital region) and the head positioned according to the Frankfurt plane. To facilitate the reading of the height value, a ruler was used as a cursor, which was fixed against the student's head, applying sufficient pressure on the

hair when necessary. In the end, the measurement was read and registered.

The Body Mass Index (BMI) was determined through the relation of body weight (in kilograms) over the square of the height (in meters) and considered the recommendations of the WHO [25] low weight: < Percentile 3; normal: ≥ Percentile 3 and < Percentile 85; overweight: ≥ Percentile 85 and < Percentile 97; obesity: ≥ Percentile 97.

2.4 Statistical analysis

The data obtained through the questionnaires were processed in the Microsoft Excel™ program to create the database, graphs, and tables. Categorical variables were presented as frequencies and percentages. The normality of the data was evaluated using the test of Shapiro-Wilk. Simple linear regression was used to assess the relation between the values of BMI and food choices/consumption variables as it for BMI and Period dedicated to the use of electronic devices on a daily basis. The Epi Info™ software (Centers for Disease Control and Prevention - CDC, Atlanta, GA, USA, version 7.2.2.6) was also used for descriptive and inferential statistical analysis, adopting a significance level of $p \leq 0.05$.

2.5 Ethical aspects

An Informed Consent Form (ICF) was applied in Angolan Portuguese, in which a clause was included to request the students' free participation, and it subsequently returned with the appropriate signatures.

The research project was submitted to the Human Research Ethics Committee of the Catholic University of Angola, and approved on 27th June 2019, under Final Resolution No 31.

3 Results

3.1 Socio-demographic characteristics of the students

From the 268 students investigated, 236 (88 %) were aged between 8 to 14 years, and 32 (11.9 %) between 15 to 17 years. The average age was 11.56 ± 2.35 years. There was a predominance of female sex, with 161 (60 %) participants and a further 107 (39.9 %) were of male sex. All students belonged to general education system, of which 50 (18.6 %) were from 3rd grade, 102 (38 %) from 4th grade to 6th, and 116 (43.2 %) from grade 7th to 9th. The municipalities of Cazenga and Luanda appeared most frequently in the home category, being 97 (36.19 %) and 91 (33.96 %), respectively (Table 1).

Table 1. Socio-demographic characteristics of the students

Indicators	N	%
*Age (years)		
- 8 to 14	236	88.06
- >14	32	11.93
Sex		
- Female	161	60.07
- Male	107	39.93
Scholar Grade		
- 3rd	50	18.66
- 4th to 6th	102	38.06
- 7th to 9th	116	43.28
Location		
- Cacuaco	4	1.49
- Cazenga	97	36.19
- Kilamba-kiaxi	37	13.81
- Luanda	91	33.96
- Viana	18	6.72
- Unreported	21	7.84

*WHO, Geneva (1986)

3.2 Nutritional status of students

With the anthropometric evaluation, it was possible to observe overweight in 36 (15.25 %) children and 3 (9.37 %) adolescents, and 17 (7.2 %) children presented obesity. Of the alterations observed, overweight was predominant in both children and adolescents. Obesity was observed more frequently in children than in adolescents. On the other hand, 21 (8.89 %) children were underweight (Figure 1).
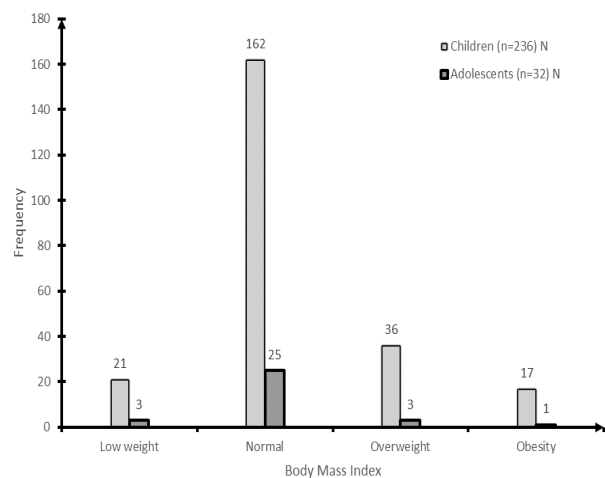

Figure 1. Nutritional status of students

3.3 Habit of using electronic devices during meals

Regarding the habit of using electronic media devices at meal times, 91 (38.55 %) children and 14 (43.75 %) adolescents answered that they have a frequent habit of watching TV at mealtimes, 70 (29.66 %) children and 15 (46.87 %) adolescents watch it occasionally. On the other hand, frequent use of mobile phones at meal times was observed in 16 (6.77 %) children and only 3 (9.37 %) adolescents. On the other hand, the option "Never" was the most predominant among children for both cell phones, 200 (84.74 %) and Internet, 185 (78.38 %) use at mealtime, as well as for adolescents, cell phones 27 (84.37 %) and Internet 16 (50 %) at mealtime (Table 2).

Table 2. Habit of using electronic devices during meals

Variables	Children (n=236)		Adolescents (n=32)		Total (n=268)	
	N	%	N	%	N	%
Watching TV at mealtimes						
- Always	91	38.55	14	43.75	105	39.17
- Never	75	31.77	3	9.38	78	29.10
- Occasionally	70	29.66	15	46.87	85	31.71
Use cell phone at mealtimes						
- Always	16	6.77	3	9.37	19	7.08
- Never	200	84.74	27	84.37	227	84.70
- Occasionally	20	8.47	2	6.25	22	8.20
Using the Internet at mealtimes						
- Always	14	5.93	5	15.62	17	6.34
- Never	185	78.38	16	50	201	75
- Occasionally	37	15.67	11	34.37	48	17.9

3.4 Foods consumed by students while using electronic devices

When asked if they felt the desire to eat any food previously seen on the TV images, 175 (74.15 %) children said yes, and 20 (57.14 %) adolescents gave the same answer. Both groups reported a greater desire to consume fast food when seen in TV images, 69 (29.23 %) children and 8 (25 %) adolescents, respectively. Most of the students showed a preference to consuming sweets while watching TV, among which, 129 (54.66 %) children and 21 (65.62 %) adolescents. It was also found that 85 (36.01 %) children and 11 (34.36 %) adolescents chose the option "other foods" (Table 3).

Table 3. Type of food students consume while using the electronic media

Variables	Children (n=236)		Adolescents (n=32)		Total (n=268)	
	N	%	N	%	N	%
Feel the desire of eating food previously seen on TV images						
- Yes	175	74.15	20	57.14	195	72.76
- No	57	24.15	12	37.5	69	25.74
- No reply	4	1.69	-	-	4	1.69
Desired foods when previously seen on TV pictures						
- Fruit and vegetables	42	17.79	3	9.37	45	16.79
- Sweets	40	16.94	2	6.25	42	15.67
- Fast foods	69	29.23	8	25	77	28.73
- Other foodstuffs	31	13.13	6	18.75	37	13.80
- No reply	54	22.88	13	40.62	67	25
Foods you like to eat while watching TV						
- Fruit and vegetables	52	22.03	7	21.87	59	22.01
- Sweets	129	54.66	21	65.62	150	55.97
- Fast foods	52	22.03	6	18.75	58	21.64
- Other foodstuffs	85	36.01	11	34.37	96	35.82

3.5 Period dedicated to the use of electronic devices on a daily basis

As for the period dedicated to the use of electronic devices, children showed higher frequency in the option "only at night", both for the use of television 85 (36.02 %), cell phone 84 (35.59 %) and the internet 52 (22.03 %), this on weekdays. On weekends and holidays, 79 (33.47 %) of them declared that they spent the "whole day" watching television (Table 4).

In the case of adolescents, it was observed that on weekdays, the period of the day when they most devote themselves to television is at night, with a frequency of 18 (56.25 %), and 24 (75 %) of them also assumed that they use the Internet during this period. On weekends and holidays, television is also watched more at night, 25 (78.12 %), only 10 (31.25 %) stated that they watch it all day long, and 15 (46.88 %) stated that they use the Internet only at night (Table 4).

Table 4. Period dedicated to the use of electronic devices on a daily basis

Variables	Children (n=236)				Adolescents (n=32)			
	From Monday to Friday		Weekends and holidays		From Monday to Friday		Weekends and holidays	
	N	%	N	%	N	%	N	%
Watch TV								
All morning long	46	19.49	48	20.34	12	37.50	9	28.13
The whole afternoon	68	28.81	65	27.54	1	3.13	9	28.13
Just in the evening	85	36.02	25	10.59	18	56.25	25	78.12
All day long	23	9.75	79	33.47	1	3.13	10	31.25
None	14	5.93	19	8.05	0	0	0	0
Use cell phone								
All morning long	10	4.24	17	7.20	1	3.13	1	3.13
The whole afternoon	24	10.17	50	21.19	1	3.13	8	25
Just in the evening	84	35.59	48	20.34	10	31.25	3	9.38
All day long	11	4.66	31	13.14	1	3.13	2	6.25
None	107	45.54	90	38.14	19	59.38	18	56.25
Use Internet								
All morning long	12	5.08	10	4.24	2	6.25	1	3.13
The whole afternoon	22	9.32	30	12.71	1	3.13	3	9.38
Just in the evening	52	22.03	39	16.53	24	75	15	46.88
All day long	21	8.90	41	17.37	3	9.38	11	34.38
None	129	54.66	116	49.15	2	6.25	2	6.25

3.6 Statistical association between BMI and other variables

As for statistical association, in the present study, it was observed, particularly in adolescents, that there was a statistically significant association between BMI, the desire to consume food previously seen on TV (p = 0.03) and also the habit of eating nutritionally inadequate food while watching TV (p = 0.01) (Table 5).

The period of using electronic devices also showed a statistically significant association with BMI, in the case of adolescents p = 0.01 and p = 0.03, respectively, for the habit of watching television and using the cell phone. Meanwhile, in children, the Internet use was significantly associated with BMI with p = 0.01 (Table 5).

Table 5. Statistical association between BMI and other variables

Variables	BMI	
	Children	Adolescents
	p-value	p-value
- Feel the urge of eating food previously seen on the TV images	0.14	0.03
- Foods you like to eat while watching TV	*0.85	*0.01
- Watch TV	-	**0.01
- Use cell phone	-	**0.03
- Use internet	***0.01	-

Significance level of p≤ 0.05; * Consumption of sweets; * Weekdays; *** Weekends and holidays

4 Discussion

In this study, the results showed that 15.25 % of children and 9.37 % of adolescents were overweight, 7.2 % were obese and 8.89 % were underweight. These data reinforce those of other studies [26–28] conducted in Southern African Countries and in Burkina Faso which also show that overweight and underweight coexist among the surveyed students. These studies not only found a high prevalence of weight change but also identified the presence of the double burden of malnutrition in the populations studied.

The habit of watching TV at mealtimes was reported by most of the students of which 38.55 % of the children and 43.75 % of the adolescents answered that they always do it. However, 6.77 % of children and 9.37 % of adolescents admitted to using mobile phones during meals. The same trend was observed in a study [29] in which an overall prevalence of 70 % was observed. This denotes a great need to limit children's interaction with electronic devices on a daily basis, especially at meal times.

The desire to consume food previously seen on TV images was confirmed by both children (74.15 %) and adolescents (57.14 %), similarly when it comes to fast foods and/or treats. Similar reports were observed in the study by Sousa et al. [30], in which it was found that the consumption of nutritionally inadequate foods is also associated with the habit of eating foods in front of digital screens. Bearing in mind that in the present study, 54.66 % of children and 65.62 % of adolescents stated that they have a greater preference for consuming sweets while watching TV. Despite excessive consumption of sweets, low weight was still found in the population studied, so other factors such as metabolism, calorie balance, general eating habits, and the lifestyle of the population should be taken into account.

Other foods that are not part of the groups highlighted in the present study were also mentioned with great frequency in the

question about the foods they prefer to eat while watching TV. Among those, is *Funge*, a typical Angolan preparation based on maize and/or cassava flour, which is consumed usually with the most varied vegetables and/or products of animal origin. Although the frequency of preference for the consumption of fruit and vegetables in front of the TV is similar to that of fast foods, and the group "other foods" includes foods and preparations that include plant and animal products, the results still reflect the need to regulate the advertisements of food products, as suggested by Moura [31].

Tables 2 and 3 describe common everyday behaviors that are inappropriate for child development and health.

In the study of O'Halloran et al, on the influence of the family environment on the food choices of children in South Africa, two-thirds of the legal guardians stated that they set rules at home for the consumption of snacks and sweets [32].

The habit of watching television at mealtimes presents a frequency that indicates the presence of bad habits in the lifestyle of the studied population. This reality is added to the fact that the foods, most frequently ingested while watching television, are sweets, which reinforces the idea that children can make their food choices depending on the advertisements seen on television, and this habit is frequent in overweight children [33].

The same study also highlighted that the family environment is essential for the development of healthy eating habits in children.

The present study also demonstrated two statistically significant associations of the BMI of the adolescents, specifically with the desire to consume foods previously seen in images and with the habit of consuming foods considered nutritionally inadequate. The existence of negative effects on the BMI of children who tend to consume foods previously seen in images was also verified in the study of Russell et al.[34]. Other studies have reported that children and adolescents have greater preference to the consumption of processed foods while watching TV, and that exposure to TV favors the choice of foods considered nutritionally inadequate [18, 35].

In the present study, there was also a statistically significant association between BMI, the habit of watching television and using cell phones among adolescents, and Internet use among children. Overweight is associated with the daily time children devote to screens with the habit of eating foods of low nutritional value [35].

To complement these reports, studies such as that of Avery et al. [36] and of Okeyo et al. [37], also identified a significant positive association between eating food while watching TV on children's BMI, bearing in mind that the previous study was conducted in African adolescents.

5   Conclusion

The objective of this study was to verify the influence of the media on the food choices of teenage students in Angola. Overweight and obesity were found in high frequency, as well as underweight, this data that leads us to reflect on the presence of the double burden of malnutrition in Angola and on the nutritional transition.

The use of media devices at mealtimes was a trend widely observed in the present study, highlighting the importance of acting directly in schools and churches, to carry easily the message of adopting healthy eating behaviors and practices, since in our context, these are the most frequented places by children and parents/legal guardians. The constant consumption of food in front of the media can encourage the uncontrolled intake of nutritionally inadequate foods.

Based on the present study, the increase in BMI is statistically associated with the consumption of nutritionally inadequate food in front of the TV, since adolescents who choose their food under the influence of the images, they see on the TV have a higher risk of developing obesity. Further studies are needed, capable of determining the influence of sociocultural and socio-economic conditions on students' food choices and practices, as well as on their nutritional status.

This study has some limitations, such as the fact that the results were compared with works of foreign authors, mostly Brazilian, because there are no documents (monographs, theses, scientific articles and books) of Angolan production that address similar topics; the non-inclusion of food frequency data, socioeconomic data and the parents' report on the eating behavior of their children.

The present study does not present data such as employment status of parents, household head, household size, religion, time spent watching television per day, besides having been conducted only in some areas of Luanda, considering the population density, which is mostly young. However, we call for more robust studies to be done on the factors related to dietary influence in children and adolescents.

References

[1] Vaz, D. S., & Bennemann, R. M. (2014). Comportamento alimentar e hábito alimentar: Uma revisão. *Revista UNINGÁ Review*, *20*(1), 108–112.

[2] Diez Garcia, RW (1999). Food, diet, taste: change in urban food culture (Thesis (Doctorate). Universidade de São Paulo, São Paulo.

[3] Ramos, M., & Stein, L. M. (2000). Development of children's eating behavior. *Jornal de Pediatria*, *76*(8), 229–237. https://doi.org/10.2223/jped.160

[4] Mahan, L. K., Escott-Stump, S., & Raymond, J. L. (2011). *Krause's food & the nutrition care process* (13th ed.). Saunders

[5] Mahan, L. K., & Raymond, J. L. (2017). Krause's food & the nutrition care process. (14th ed.) Saunders.

[6] Tosatti, A. M., Ribeiro, L. W., Machado, R. H. V., Maximino, P., Bozzini, A. B., Ramos, C. de C., & Fisberg, M. (2017). Does family mealtime have a protective effect on obesity and good eating habits in young people? A 2000-2016 review. *Revista Brasileira de Saúde Materno Infantil*, *17*(3), 425–434. https://doi.org/10.1590/1806-93042017000300002

[7] Brasil. Ministério da Saúde. (2008). Manual operacional para profissionais de saúde e educação: Promoção da alimentação saudável nas escolas (1ª ed.). Brasília, Brasil.

[8] Bibiano, C. R. D., & Schmidt, I. T. (2010). A INFLUÊNCIA DA TELEVISÃO NA ALIMENTAÇÃO INFANTIL: UMA QUESTÃO EDUCATIVA. *Colloquium Humanarum*, *07*(02), 74–79. https://doi.org/10.5747/ch.2010.v07.n2/h089

[9] *Goal 2: Zero hunger*. (2015, January 7). United Nations Sustainable Development; United Nations: Sustainable Development Goals. https://www.un.org/sustainabledevelopment/hunger/

[10] FAO. (n.d.). Indicadores. Acesso em 02 de Set de 2022, disponível em Observatório Africano integrado da Saúde (iAHO): https://aho.afro.who.int/ind/af?dim=81&dom=Ali menta%C3%A7%C3%A3o%materna%20e20infantil

[11] WHO/Global Health Observatory. (n.d.). AHO Data Bank. Fonte: Angolan Health Observatory: https://aho.afro.who.int/data-bank/ao

[12] Di Cesare, M., Sorić, M., Bovet, P., Miranda, J. J., Bhutta, Z., Stevens, G. A., Laxmaiah, A., Kengne, A.-P., & Bentham, J. (2019). The epidemiological burden of obesity in childhood: a worldwide epidemic requiring urgent action. *BMC Medicine*, *17*(1). https://doi.org/10.1186/s12916-019-1449-8

[13] Ganu, D. (2019). Prevalence and contributing factors for overweight and obesity in children 0-18 years in sub Saharan Africa for 20-year period: Systematic review. *Acta Scientific Nutritional Health*, *3*(12), 67–72. https://doi.org/10.31080/asnh.2019.03.0534

[14] Danquah, F. I., Ansu-Mensah, M., Bawontuo, V., Yeboah, M., & Kuupiel, D. (2020). Prevalence, incidence, and trends of childhood overweight/obesity in Sub-Saharan Africa: a systematic scoping review. *Archives Belges de Sante Publique [Archives of Public Health]*, *78*(1). https://doi.org/10.1186/s13690-020-00491-2

[15] Boyland, E. J., Nolan, S., Kelly, B., Tudur-Smith, C., Jones, A., Halford, J. C. G., & Robinson, E. (2016). Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults. *The American Journal of Clinical Nutrition*, *103*(2), 519–533. https://doi.org/10.3945/ajcn.115.120022

[16] Smith, R., Kelly, B., Yeatman, H., & Boyland, E. (2019). Food marketing influences children's attitudes, preferences and consumption: A systematic critical review. *Nutrients*, *11*(4), 875. https://doi.org/10.3390/nu11040875

[17] Kelly, B., Vandevijvere, S., Ng, S., Adams, J., Allemandi, L., Bahena-Espina, L., Barquera, S., Boyland, E., Calleja, P., Carmona-Garcés, I. C., Castronuovo, L., Cauchi, D., Correa, T., Corvalán, C., Cosenza-Quintana, E. L., Fernández-Escobar, C., González-Zapata, L. I., Halford, J., Jaichuen, N., … Swinburn, B. (2019). Global benchmarking of children's exposure to television advertising of unhealthy foods and beverages across 22

countries. *Obesity Reviews: An Official Journal of the International Association for the Study of Obesity*, *20*(S2), 116–128. https://doi.org/10.1111/obr.12840

[18] Agrocluster Ribatejo. (Março de 2015). Tendências do mercado alimentar de Angola e Moçambique: Consumidor, produto, distribuição e comunicação. 37 e 41.

[19] Spaniol, A. M. (2014). Influência da publicidade de alimentos sobre a escolha alimentar de crianças e adolescentes de escolas públicas do Distrito Federal. (Dissertação de mestrado em Nutrição Humana, Universidade de Brasília), 83- 85. Brasília, Brasil. https://repositorio.unb.br/bitstream/10482/16798/1/2014_AnaMariaSpaniol.pdf

[20] Knoema. (2021). Telecomunicação. Fonte: Knoema: https://pt.knoema.com/atlas/Angola/Assinaturas-de-celulares-m%c3%b3veis-cada-100-habitantes?mode=amp

[21] INE Angola. (2014). Resultados definitivos do recenseamento geral da população e da habitação de Angola 2014. Instituto Nacional de Estatística, Gabinete Central do Censo, Luanda. Fonte: https://dhsprogram.com/pubs/pdf/FR327/F327.pdf&ved

[22] Mattos, M. C. (2014). Infância e a Publicidade na Televisão: Um Estudo Sobre a Influência das Propagandas de Alimentos na Escolha Alimentar de Criança. (Dissertação de Mestrado em Saúde e Educação, Universidade de Ribeirão Preto), 47. Fonte: https://unaerp.br/documentos/1341-dissertmestmarilia2014

[23] Luiz, R.R. & Magnanini, M.M.F. (2000). Lógica da Determinação do Tamanho da Amostra em Investigações Epidemiológicas. *Caderno de Saúde Colectiva, 8*(2), 9-28.

[24] Young people's health--a challenge for society. Report of a WHO Study Group on young people and "Health for All by the Year 2000". (1986). World Health Organization technical report series, 731, 1–117.

[25] World Health Organization. (2007). WHO Growth Reference data for 5 - 19 years. https://www.who.int/growthref/en

[26] Nnyepi, M. S., Gwisai, N., Lekgoa, M., & Seru, T. (2015). Evidence of nutrition transition in Southern Africa. *The Proceedings of the Nutrition Society*, *74*(4), 478–486. https://doi.org/10.1017/s0029665115000051

[27] Ouedraogo, M., Ouedraogo, O., Zongo, U., Kabore, S., Bambara, E. A., & Sanou, D. (2020). Nutrition situation of Burkina Faso: A narrative review. *The North African Journal of Food and Nutrition Research, 4*(9), S36-S45. https://doi.org/10.51745/najfnr.4.9.s36-s45

[28] Mapfumo, P. T., Muderedzwa, T. M., & Matsungo, T. M. (2022). Prevalence and determinants of overweight and obesity among in-school adolescents in Harare, Zimbabwe. *The North African Journal of Food and Nutrition Research, 6*(13), 29-38. https://doi.org/10.51745/najfnr.6.13.29-38

[29] Zagminan, A., Moraes, D. M., Belfort, I. A., Dias, L. P. P., & Coimbra, L. M. P. de L. (2019). EXPOSIÇÃO A MÍDIA E HÁBITOS ALIMENTARES DE ADOLESCENTES EM UMA ESCOLA PRIVADA DE SÃO LUÍS-MA. *Revista de Investigação Biomédica*, *10*(2), 165. https://doi.org/10.24863/rib.v10i2.255

[30] Sousa, T. M. de, Santos, L. C. dos, Costa, H. T. P., Carvalho, R. B. de, & Pereira, S. C. L. (2019). Factors associated with the consumption of food markers of unhealthy diet among school children in situations of high health vulnerability. *Journal of Tropical Pediatrics*, *65*(6), 576–582. https://doi.org/10.1093/tropej/fmz013

[31] Moura, N. C. (2015). Influência Da mídia no comportamento alimentar de crianças E adolescentes. *Segurança Alimentar e Nutricional, 17*(1), 113. https://doi.org/10.20396/san.v17i1.8634805

[32] O'Halloran, S., Eksteen, G., Polayya, N., Ropertz, M., & Senekal, M. (2021). The food environment of primary school learners in a low-to-middle-income area in Cape Town, South Africa. *Nutrients*, *13*(6), 2043. https://doi.org/10.3390/nu13062043

[33] Costa, M. R. (2016). *A influência da mídia televisiva nas escolhas alimentares das crianças e na obesidade infantil: Uma revisão de literatura.*

[34] Russell, S. J., Croker, H., & Viner, R. M. (2019). The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis. *Obesity Reviews: An Official Journal of the*

International Association for the Study of Obesity, *20*(4), 554–568. https://doi.org/10.1111/obr.12812

[35] Fidencio, J., Ferreira, MG, Czarnobay, SA, & Campos, VM (2018). Association between nutritional status, hours of screen consumption and physical activity in adolescents. *RBONE - Brazilian Journal of Obesity, Nutrition and Weight Loss, 12* (72), 535-541. Retrieved from http://www.rbone.com.br/index.php/rbone/article/view/744

[36] Avery, A., Anderson, C., & McCullough, F. (2017). Associations between children's diet quality and watching television during meal or snack consumption: A systematic review. *Maternal & Child Nutrition*, *13*(4). https://doi.org/10.1111/mcn.12428

[37] Okeyo, A. P., Seekoe, E., de Villiers, A., Faber, M., Nel, J. H., & Steyn, N. P. (2020). Dietary practices and adolescent obesity in secondary school learners at disadvantaged schools in South Africa: Urban–rural and gender differences. *International Journal of Environmental Research and Public Health*, *17*(16), 5864. https://doi.org/10.3390/ijerph17165864