Journal of Food and Nutrition Science
Volume 1 (2021) 7 Pages

Research Article | *Open Access*

The Role of Dietary Practices and Nutrition Status of Schools in Kenya

Abong Nyachieo[1]*, Okoth Njue[1], Owade Jobor[2], Fazleabas Kadija[2]

[1]Department of Food Science, Nutrition and Technology, University of Nairobi, Kangemi, Kenya
[2]Food and Nutritional Evaluation Laboratory (FANEL), International Potato Centre (CIP), Sub-Saharan Africa (SSA) Regional Office, Old Naivasha Road, Nairobi, Kenya

***Correspondence:** Abong Nyachieo, Department of Food Science, Nutrition and Technology, University of Nairobi, Kangemi, Kenya. E-mail: nyachieo.ab1458@gmail.com

Received: January 08, 2021;
Accepted: January 28, 2021;
Published: February 04, 2021

Citation: Abong Nyachieo, Okoth Njue, Owade Jobor, Fazleabas Kadija. The Role of Dietary Practices and Nutrition Status of Schools in Kenya. J Food Nutr Sci. (2021);1(1): 1-7

ABSTRACT

Regular meal consumption, consistent physical activity habits and a diet characterized by a favorable nutrient profile all contribute to a healthy way. unfortunately, the feeding behaviors of adolescents are characterized by high consumption of able to eat foods, frequent snacking particularly of food of low nutrition quality and unhealthy weight loss practices like skipping meals, additional therefore breakfast. The poor decisions on what to eat and snack on, created by the adolescents, puts them in danger of being thin, overweight and or rotund. beneath nutrition, overweight and fat are problems with public health concern, as they world faces the double burden of deficiency disease. The aim of the study was to work out the dietary habits and nutrition standing of adolescents in mixed day public secondary colleges. As such, the study adopted a cross-sectional analytical study style. The study population comprised of adolescents in mixed public day secondary colleges in Thika, Kiambu County, Kenya wherever 212 adolescents more established the study instruments. knowledge was collected mistreatment man of science administered structured questionnaires. knowledge on dietary intake was collected mistreatment 7-day food diary and a seven-day food frequency form. measure measures of Weight, height; that was accustomed calculate body mass index and waist circumference in addition hip circumference to calculate waist-hip quantitative relation were conjointly taken to work out the nutrition standing. Dietary intake knowledge was analyses mistreatment nutri-survey, whereas United Nations agency anthro-plus was accustomed calculate the nutrition standing of the adolescents. knowledge analysis was conducted mistreatment SPSS (IBMTM) version twenty. The results indicated that adolescent skip meals particularly the breakfast meal, consume high sugar food, and effervescent drinks. the typical energy intake per day was 2467.1±723.96 Kcal with solely 21.1% of boy and 35.9% ladies earned the RDA. Majority of the respondents 88.7% had z-scores of between < +1sd and >-2sd, 5.7% were in danger of metabolic disorders as assess mistreatment waist circumference whereas four.7% had abdominal fat once waist-hip quantitative relation make up my mind.

Key words: Adolescents, Dietary follow, Nutrition standing, Secondary colleges.

1. Intruduction

Adolescence may be a vital amount of growth and development in a very person's lifecycle. it's a stage of speedy mental, physical and emotional growth [1]. Nutrition desires for vitamins, minerals, supermolecule and energy are terribly high at this era. Failure to achieve these nutrients then will slow linear growth and sexual maturation therefore affected adolescent don't attain their full potential. unfortunately, the feeding behaviors of adolescents are characterized by high consumption of able to eat foods, frequent snacking particularly of food of low nutrition quality and unhealthy weight loss practices like skipping meals, additional therefore breakfast [2-4].

Adolescent stage may be a section wherever emotional, physical and emotional growth [1] and a stage wherever personal way alternative are created, these decisions together with a healthy way and food consumption patterns. analysis indicate that, habits adopted in adolescence are seemingly to be carried into adulthood forever [5]. sadly, adolescents are additional vulnerable to unhealthy behaviors, biological process compromises, poor dietary practices, physical inactivity and psychosocial stresses that form their personalities and way patterns. The speedy physiological changes that adolescents bear, influence their body's biological process demands whereas different external factors such perceptions, lifestyles and beliefs regarding body size and form influence their dietary decisions and practices [6].

Pendergast et al. [7] conducted a scientific review and reported that meal skipping is rated between 4-57% for dinner, lunch 8-57% and 14-88% for breakfast. Britton [8] reported that thirty first of adolescents within the u. s. skipped breakfast. In their study Onyiriuka and Umoru [9] found that forty eight.1% of the respondents reported skipping a minimum of one meal, in Brazil, regular meal consumption among adolescents was reported at forty seventh, seventy eight and fifty two for breakfast, lunch, and dinner severally [10]. additionally, skipping meals was conjointly related to low consumption of fruits and vegetables [10].

Trends show a rise within the rates of deficiency disease each in developing and developed countries, that is a difficulty of concern. More so, adolescence may be a stage that needs the best amounts of nutrients each small and macro within the lifecycle. additionally, dietary habits are coupled to educational performance [11] whereas education standing may be a determinant of the economic standing that interprets to country's economy. More so, if adolescent stage provides a window of chance to correct childhood deficiencies and adopted behavior on health way are carried into adulthood, then, understanding food habits of adolescents is vital. Addressing dietary habits of adolescents perhaps key to reducing the value of deficiency disease that averages three.1 billion bucks every year globally. Despite of all this, very little analysis has been administrated on dietary habits of adolescents in Kenya.

2. Materials And Methods

Cross-sectional analytical analysis style was accustomed collect knowledge. In formation on total nutrient intake was obtained from the 7-day food diary wherever a median intake was calculated. Nutrition standing knowledge was obtained from weight, height, waist and hip circumference. Weight and height were calculated as BMI-forage and classified into four categories; wasted, normal, overweight and rotund. whereas waist circumference was classified as health or in danger of, metabolic disorders whereas waist and hip circumference quantitative relation knowledge were classified as traditional or rotund (having abdominal obesity).

2.1 Dietary Assessment

Data on dietary consumption was obtained employing a 7-day food diary. A food diary may be a prospective technique of dietary intake that doesn't consider respondent memory jointly records what they consume at the instant. Food diary is correct on food intake and nutrients.

The participants were then trained on a way to fill the 7-day food diary and the way to quantify food mistreatment domestically out their social unit utensils such serving spoons, cups, tablespoons, and teaspoons. Visual aids and food models were conjointly provided for the scholars to assist in estimating food parts. Students were extremely inspired to record the meals as before long as they consume them and indicate the time food was consumed. The food diaries were collected from the adolescent the subsequent day by the assistance of teacher and analysis assistants.

2.2 Measurement of Nutrition Standing of Adolescents

Nutrition standing was assessed by measurement measurements of weight, height waist circumference and Hip circumference as stipulated within the World Health Organization normal procedures. every participant was asked to empty their pockets, take away shoes and serious wear throughout the measurements. weight and height were measured to the closest zero.1 kg and 0.1 cm, severally, victimisation Associate in Nursing electronic scale with

hooked up stadiometer (SECA 220, Germany). Waist and hip circumferences were measured to the closest zero.1 cm with a measure tape. Waist circumference was measured at the mid-point between the highest of the os crest and therefore the lower margin of the smallest amount palpable rib, whereas hip circumference was measured at the utmost circumference of the buttocks in a very horizontal plane.

All the measurements were taken doubly. However, if the measurements differed by quite 1.0 cm (height, circumferences) and one.0 weight unit (weight), a 3rd measure was taken. The measurements recorded for every participant was the mean values of the 2 highest measurements. Weight and height measurements and age were wont to calculate BMI-for-age of the adolescents. Waist and hip circumference measurements were used calculate the waist hip quantitative relation.

2.3 Data Analysis

Data was entered and clean victimisation Census and Survey process System CsPro software system version seven.0. applied math Package for scientific discipline (SPSS) version twenty was wont to analyse the information from sociodemographic and economic form, the food diary, food frequency form and measuring. Nutrisurvey software system was then be wont to calculate dietary intake information from the food diary. hand-picked nutrients; carbohydrates, proteins, fiber, Vitamin A, folate, iron, Ca and atomic number 30 were analysed and documented as counseled by Brown et al. [1]. measuring measurements were analysed victimisation the WHO-Anthroplus software system version 3.2.2 program and computation of BMI-for-age was done. World Health Organization [12] body mass index (BMI-Z) bring to a halt points were wont to categorise measurement information. Chi-square and Pearson correlations were wont to check the link between the variables and a p-value.

3. Results

3.1 Socio-Demographic Characteristics

Out of the 228 targeted adolescents, 212 responded. Majority of the respondent were male representing 51.4% whereas 48.6% were females. The mean age of the study population was fifteen.7 ± 1.06 (sd) with majority (31.1%) being of 16-year-old. Majority of the adolescents, 64.6% lived with each folk (father and mother) with the mean home size was four.93 ± 1.59. The caregivers interviewed majority were feminine (82.5%) of average age of forty.85 ± 7.72 years while solely forty.6% had completed educational activity (Table 1).

Characteristics		n (212)	%
Gender of adolescent	Male		
	Female		
Age in years	14	32	15.1
	15	55	25.9
	16	66	31.1
	17	59	27.8
Adolescent caregivers	Both parents	137	64.6
	Father	5	2.4
	Mother	45	21.2
	Grand parents	4	1.9
	Elder brother/sister	7	3.3
	Aunt/uncle	14	6.6
Household size	2	13	6.1
	3	21	9.9
	4	52	24.5
	5	59	27.8
	6	38	17.9
	7	16	7.5
	>8.00	13	6.1
	Mean 4.93±1.59sd		
Gender of caregiver	Male	37	17.5
	Female	175	82.5
Age of caregiver	20-30 years	7	3.3
	31-40 years	118	55.6
	41-50 years	66	31.1
	51-60 years	19	8.9
	>60 years	2	1.1
	Mean age 40.85±7.72		
Education of caregiver	No formal education	6	2.8
	Primary incomplete)	8	3.8
	Primary complete)	42	19.8
	Secondary incomplete)	33	15.6
	Secondary complete)	86	40.6
	Tertiary	37	17.5

Table 1: Socio-demographic characteristics of Adolescent attending mixed day public secondary schools in Kenya.

3.2 Meal Frequency of Adolescents

Meal skipping could be a common follow among adolescent, during this study, a meal skipper was outlined as skipping a meal 3 or a lot of times within the seven days that the dietary information was recorded. Breakfast was the foremost oftentimes skipped meal with fourteen.6% whereas a coffee share skipped lunch at four.6%. (Table 2).

Meal	Skipped (%)	Consumed (%)
Breakfast	14.6	85.4
Lunch	4.2	95.8
Dinner	6.6	93.4

Table 2: Meal frequency of adolescents.

3.3 Nutrient Intake

The mean average energy consumption for the study population was 2467.1±723.96 Kcal. The biological process demand throughout adolescent is that the highest and varies across gender for ladies and boys. Table 3 shows nutrient intake of hand-picked nutrients among the adolescents per gender. All adolescents earned RDA for supermolecule and saccharide whereas no adolescent earned the RDA for Ca this can be alarming bearing in mind that everyone Ca is obtained from the diet and Ca is important for bone development.

Nutrient	Gender	RDA	Mean intake	Attained RDA	
				N (212)	%
Kcal	Male	3152	2619.5 ± 697.03	23	21.1
	Female	2368	2327 ± 727.26	37	35.9
Carbohydrate g/d	Male	130	767.7 ± 232.64	109	100
	Female	130	642.5 ± 251	103	100
Proteins g/d	Male	52	101.9 ± 23.41	109	100
	Female	46	87.6 ± 29.83	103	100
Fiber g/d	Male	38	20.2 ± 7.37	3	2.8
	Female	26	20.0 ± 7.10	18	17.5
Vit A µg/d	Male	900	368.7 ± 371.32	3	2.8
	Female	700	455.9 ± 574.95	9	8.7
Folate µg/d	Male	400	214.6 ± 73.57	3	2.8
	Female	400	229.4 ± 97.09	9	8.7
Iron mg/d	Male	11	43.9 ± 23.15	109	100
	Female	15	31.8 ± 16.54	79	76.7
Calcium mg/d	Male	1300	511.8 ± 151.28	0	0
	Female	1300	470.8 ± 189.87	0	0
Zinc mg/d	Male	11	4.9 ± 2.25	3	2.8
	Female	9	5.2 ± 2.57	9	8.7

Table 3: Selected nutrient intake among the adolescents.

All the males met the RDA for iron whereas solely 76.7% of {the feminine|the feminine} earned RDA nevertheless female need a lot of iron to cater for blood loss throughout catamenia. ant ophthalmic factor and atomic number 30 play a significant role in system nevertheless but 100% of the adolescent earned the RDA. additionally, to its role in immunity, atomic number 30 is important sexual maturation, that is high throughout adolescence stage.

Food frequency information was analyzed the foremost unremarkably consumed foods within the food teams bestowed below (Figure 1). Consumption of carbohydrates was high at ninety-six.9% and 96.7% for maize flour and maize grain, milk was the foremost unremarkably consumed supermolecule. Notably, consumptions of sugar were terribly high at 96.7%, with slightly quite 0.5 53.3% of the adolescent intense effervescent drinks.

The frequent consumption of milk was principally milk in tea, that was consumed alongside sugar that's, tea with milk and sugar, additionally, dish provided in class had sugar else to that. Rice was the unremarkably consumed food within the faculty menu, and this was among a beans stew explaining attainable reason for the high share of

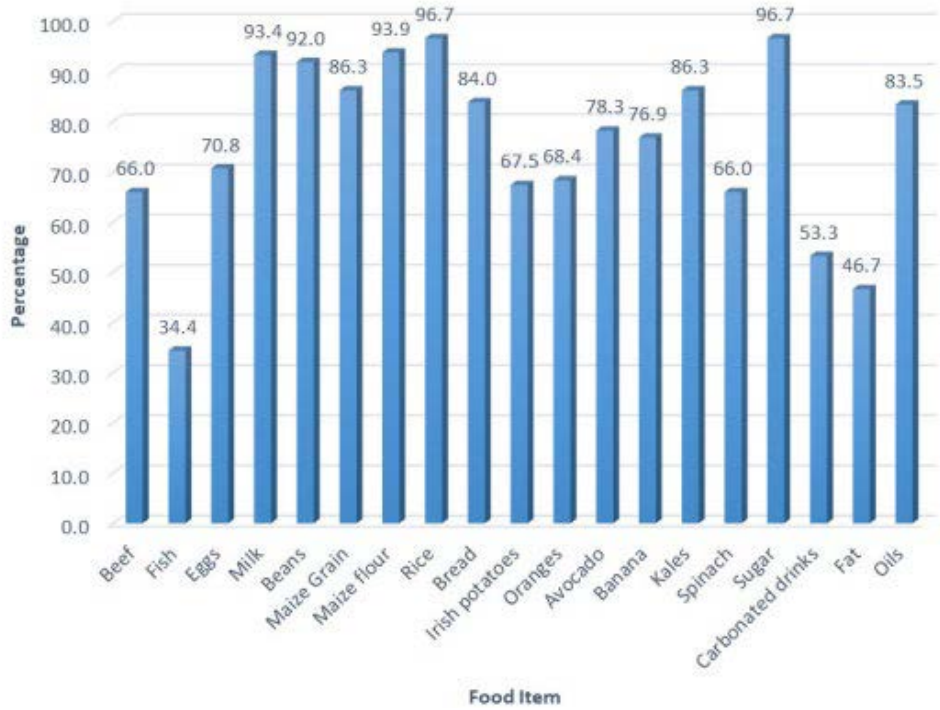

Figure 1: The 7-day food frequency data from adolescents.

Parameter		Gender	Number (n=212)	Percentage (100%)
Nutrition status by BAZ	Wasting		8	3.8
	Normal		181	85.4
	Overweight		19	9
	Obese		4	1.8
Waist circumference	Healthy	Male	109	100
		Female	91	88.3
	At risk	Male	0	0
		Female	12	11.7
Waist-Hip Ratio	Normal		202	95.3
	Obese		10	4.7

Table 4: Nutritional status of adolescents in mixed day public secondary school.

consumption. additionally, to creating stew for rice and ugali within the faculty menus, beans square measure mixed with maize (Githeri) that was conjointly a part of the college menu and additionally to food consumed reception. The median and mean consumption for the chosen foods within the food teams is diagrammatical within the Table 4.

3.4 Nutritional Standing of Adolescents

Nutrition standing of adolescent was accessed victimization measurement measurements weight, height, waist circumference and hip circumference. Weight and height were wont to calculate Z-scores (BAZ) for the adolescents whereas waist and hip circumference calculated the waist-hip quantitative relation. the information analyzed was understood and classified as wasted, normal, overweight and weighty from the Z-scores whereas waist-hip quantitative relation information was classified the respondent as having abdominal blubber or not. Majority of the respondents eighty-eight.7% had z-scores of between < +1sd and >-2sd therefore classified as traditional nutrition standing (WHO, 2008). during this study, 5.7% of the respondents were overweight whereas 3.8% were wasted.

The mean waist circumference was seventy.98 cm ± 8.58 sd, hip circumference was eighty nine.48 cm ± 7.83 sd. Waist circumference could be a tool for assessing the abdominal fat and health standing and acts as a predictor for adolescent turning into overweight or weighty [13]. A waist circumference of >94 cm in men and >80 cm in ladies, will increase the danger of diseases like coronary heart condition. within the study, 5.7% were in danger metabolic disorders. Notably, all the respondents that were in danger were all ladies.

On the opposite hand, WHR is employed as a measure of avoirdupois, that successively may be a potential indicator of alternative additional serious health conditions. A waist hip quantitative relation of but zero.9 for boys and fewer than zero.85 for women is considered traditional [12] whereas something on top of that's classified as abdominal avoirdupois. Majority, 95.3% of the adolescent had traditional waist-hip quantitative relation whereas four.7% had abdominal avoirdupois.

A correlation of BMI-Z, waist circumference, and waist hip quantitative relation discovered a correlation between BMI-Z and waist circumference that means that as waist circumference accumulated, there was a rise in BMI-Z whereas there wasn't vital correlation between BMI-Z and waist-hip quantitative relation. quantity correlation was running to determine whether there was a relationship between total nutrient intake (Kcal) and the nutrition standing of the adolescents indicated an applied mathematics significance between total nutrient intake and BAZ (P =0.043).

4. Discussion

4.1 Socio-Demographic Characteristics

The mean unit size during this study was slightly on top of the mean size of an African countryn unit in line with the Kenya Demographic and Health Survey. Nationally, 55 p.c of youngsters seventeen years and below abide each of their biological folks whereas fifty eight.2% in central African country of a similar population abide each folks this study found a rather higher variety presumably as a result of the study targeted on adolescents solely and not all kids below seventeen years.

A higher variety of ladies were interviewed as caregivers compare to men during this study. this might be as a result of historically it's the responsibility of men offer for the family so area unit|they're} away most of the day operating whereas girls desire the family and do unit chores so are additional possible to be found reception throughout the day compared to men.

4.2 Meal frequency of adolescents

Meal skipping among adolescents has been rumored to rate between 4-57% for dinner, lunch 8-57% and 14-88% for breakfast [7]. within the current study, breakfast was skipped by fourteen.5% of the adolescents, that was like studies on breakfast consumption. In their study Onyiriuka and Umoru [9] found that 48.1% rumored skipping a minimum of one meal (skippers), while 51.9% were non-skippers. like this study, Onyiriuka and Umoru [9] rumored breakfast because

the oftentimes|most often} skipped meal but contrary to the present study; they found lunch to own been skipped additional frequently than dinner. in all probability as a result of lunch was provided within the college, then adolescents eat lunch quite breakfast and dinner whose consumption can be determined and tormented by alternative factors. In their study Brown et al. [1] explained that the ingestion patterns of adolescent are influenced by peers, cost, convenience, personal and cultural believes, mass media and body image.

4.3 Energy and Nutrient Intake Among Adolescents

Adolescent stage needs a high quantity of energy and failure to realize them will slow or stop growth [1]. withal, majority of the adolescent didn't meet the RDA for energy intake. In their study among adolescent women, Montazerifar et al. found that the ladies didn't meet the RDA for Ca, Zn and pteroylglutamic acid the findings correlate with the findings of this study wherever the mean intake for Ca, pteroylglutamic acid and Zn among the ladies were below the RDA. Similarly, within the study, a high consumption of super molecule among the ladies was rumored that is on top of the RDA. In Asian nation by Washi et al. conjointly rumored similar results among the adolescent women.

Folate is a vital substance because it helps within the formation of DNA/RNA associated within the formation of red blood cells [1] and failure might have an implication on the baby if such a lady got pregnant. within the gift study, the adolescents didn't meet the RDA for pteroylglutamic acid; the results were like the findings of folate intakes of adolescent Mozambican women that were below suggested intake of four hundred μg/day. Vitolo et al. conjointly rumored a coffee intake of pteroylglutamic acid among adolescent aged fourteen to nineteen years in Brazil. Study present knowledge that illustrate risk of pteroylglutamic acid insufficiency among the adolescent. The study among Brazillian adolescents discovered the danger factors for pteroylglutamic acid insufficiency as irregular consumption of dark inexperienced vegetables and beans and having a waist circumference on top of the eightieth grade. Thomas et al. explicit that low dietary intake may be a major determinant of pteroylglutamic acid deficiency. Anemia may be a common disorder among adolescents and studies have shown a better prevalence of pteroylglutamic acid deficiency among anemic patients than iron deficiency.

Unhealthy dietary patterns in adolescents will result in diet-related chronic malady within the future. quite half the respondents had consumed soft drinks (soda) within the past 7-days from the information gathered within the FFQ, the proportion was slightly below that of Iran wherever three-quarters of the respondent rumored to consumed soft drinks. Harnack et al. showed that prime consumption of soppy drinks lessened consumption of Zn. This raises queries on whether the consumption of soppy drinks within the current study might have be the grounds of the low variety of adolescents attain their RDA for Zn. The substance current substance knowledge in African country counsel that 82.5% of youngsters are Zn deficient. it's of concern that but tenth part of adolescent met their RDA for Zn nevertheless Zn is important for immunity and sexual maturation, that is at its peak throughout adolescence.

Calcium deficiency is related to toxemia, low birth weight; rachitis and high post-menopausal bone loss. Consequentially, the intergenerational effects of utmost metal deficiency could manifest through flight associated with subclinical metal deficiency, cephalopelvic disparity or a spectrum of bone ailments. Regular consumption of farm product throughout adolescence was found to be associated with lower levels of biological time bone loss. during this study, the consumption of Ca2+ was too low compared to the RDA and no student earned the wants for this substance despite the reported consumption of milk within the food frequency. However, the milk consumption within the food frequency was consumed as tea. First State Assumpc¸ão found the speed of metal inadequate intake at eighty-eight.6% for the entire population, with 85.1% of boys and ninety-two.2% of women not attaining the RDA for metal. more than the findings of this study, First State Assumpc¸ão found the mean intake of metal intake to be 540.7 mg in ladies and 692.3 mg in boys. By virtue of exaggerated physiological desires and poor dietary intake among adolescent, there's want for intervention to boost metal intake among the adolescents.

4.4 Nutrition Standing of Adolescents

A study among adolescents in Kuwait fifty.55% of boys and forty-six.5% were overweight and weighty. This knowledge is higher from the current study statistics wherever the prevalence of overweight and blubber was seven.6%. Among the adolescents in metropolis, Libya 18.3% and 12.1% were overweight and blubber, severally whereas, 4.9% were scraggy. In Nigeria, Akingbade and Sanusi reported a prevalence of blubber, overweight and scraggy to be at four.9%, 8.7% and 11.7%, severally. the information counsel the 2 sorts of deficiency disease among adolescent that some adolescent square measure scraggy whereas others square measure overweight and weighty.

According to the planet Health Organization [12] Indicator Cutoff points for the danger of metabolic complications for Waist circumference is >94 cm for male; and >80 cm for feminine. individuals with a Waist circumference >102 cm (men); >88 cm (women) have a considerably exaggerated risk for metabolic complication whereas Waist–hip quantitative relation quantitative relation.90 cm (male) ≥0.85 cm (female) considerably will increase the danger of metabolic complication. within the current study, 5.7% had abdominal blubber from the waist circumference whereas four.7% had associate degree exaggerated risk for disorder supported their waist-hip quantitative relation.

Nutrient consumption had a major applied mathematics relationship with BAZ of the adolescents however not with the waist-hip quantitative relation or the waist circumference. doable clarification is that waist circumference and waist hip quantitative relation square measure indicators of blubber nonetheless majority of the adolescents had traditional nutrition standing.

5. Conclusion

Skipping meals was reported among the adolescent with breakfast being the foremost oft skipped meal. nearly a 3rd of the adolescent didn't meet their RDA for energy that means that their food consumption wasn't enough nonetheless adolescent is that the most nutritionally exigent stage within the lifecycle. The ingestion habits of adolescents were defined by consumption of high sugar foods, effervescent drinks and fats that square measure unhealthy. yet, a colossal majority (85.4%) of the adolescent had traditional nutrition standing with but tenth part being reported to be each overweight and weighty and some (3.8%) exhibiting wasting despite a major variety not attaining their RDA.

6. Acknowledgement

The authors give thanks Kenyatta University library for facilitating house and accessibility to on-line databases accustomed gather relevant material for manuscript preparation.

7. Ethical Statement

The study was conducted following moral approval from Kenya University moral Review Committee (ERC). consent was obtained from the parent/guardian of the adolescents before knowledge assortment whereas associate degree assent was sought-after from the adolescents.

8. References

1. Akagi A, Tanaka N, Ohnishi Y, Fujioka A, Kawada A, Tajima S. Discoid lupus erythematosus in a seborrhoeic facial distribution. Br J Dermatol. 1999;140(3):560-561.
2. Bolognia JL, Jorizzo JL, Rapini RP. Dermatology, 1st Edition in Spanish, Editorial Elsevier, Spain. 2004:601-613.
3. https://netmd.org/dermatologia/dermatologia-articulos/presentaciones-clinicas-infrecuentes-del-lupus-eritematoso-discoide
4. Ferro Farias D, Portela Redighieri I, Petri V, Muller H, Petri V. Comedonic lupus: a rare presentation of discoid lupus erythematosus. An Bras Dermatol. 2011;86(4supl1):S89-S91.
5. Chang YH, Wang SH, Chi CC. Discoid lupus erythematosus presenting as acneiform pitting scars. Int J Dermatol. 2006;45(8):944-945.
6. Hemmati I, Otberg N, Martinka M, Alzolibani A, Restrepo I, Shapiro J. Discoid lupus erythematosus presenting with cysts, comedones, and cicatricial alopecia on the scalp. J Am Acad Dermatol. 2009;60(6):1070-1072.
7. Cozzani E, Herzum A, Burlando M, Parodi A, Comedonal variant of chronic cutaneous lupus erythematosus causing mutilation of the earlobe. JAAD Case Rep. 2020;6(9):843-844.
8. Vieira ML, Marques ERMC, Leda YLA, Noriega LF, Bet DL, Pereira GAAM. Chronic cutaneous lupus erythematosus presenting as atypical acneiform and comedonal plaque: case report and literature review. Lupus. 2018;27(5):853-857.
9. Chessé C, Fernández-Tapia MJ, Borzotta F. Comedonic lupus: an unusual presentation of cutaneous lupus. 2021;112(4):370-371.
10. Droesch C, Magro C. A comedonal variant of chronic cutaneous lupus erythematosus: Case report and literature review. JAAD Case Rep. 201929;5(9):801-805.
11. Shornick JK, Formica N, Parke AL. Isotretinoin for refractory lupus erythematosus. J Am Acad Dermatol. 1991;24(1):49-52.
12. Newton RC, Jorizzo JL, Solomon AR Jr, Sanchez RL, Daniels JC, Bell JD, et al. Mechanism-oriented assessment of isotretinoin in chronic or subacute cutaneous lupus erythematosus. Arch Dermatol. 1986;122(2):170-176.
13. Amichai B, Grunwald MH. Isotretinoin in dermatology. J Dermatol Treat 2000;11(4):219-240.