

Socio-Economic Characteristics of and Snacking Among High School Adolescents in Nairobi, Kenya

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Abstract: This was a cross-sectional, descriptive study in Public National Boarding High schools in Nairobi. A sample of 352 students (172 males, 180 females) was systematically, randomly selected and allocated proportionately to both genders. This study aimed at assessing “snacking and socio-economic characteristics of adolescents in national boarding high schools in Nairobi”. A semi-structured questionnaire was used to collect quantitative data which were analyzed using Statistical Package for Social Sciences (SPSS). Qualitative data were collected through focus group discussions, key informant interview, observations, Food frequency Questionnaires. Dietary intake data using 24-hr recall were analyzed using Nutri-survey. Students were of different Socio-Economic Status (SES): High, Middle and Low. All students of High Socio-Economic Status snacked while those of Middle Socio-Economic Status and Low Socio-Economic Status snacked less. There was a significant difference between the socio-economic status of those who were snacking and those who were not ($p < 0.05$). High socio-economic status was associated with more snacking. Since snacks contribute substantially to students’ total energy intake, there is need to stock healthy nutrient-rich snacks in school canteens and their nutritional importance to be raised and emphasized.

Keywords: Canteen, High school adolescents, pocket money, snacking, snacks, Socio-economic status

I. Introduction

Snacking whether from healthy or unhealthy foods has become quite rampant in high schools where girls snack more than boys. Snacking is any intake of food or energy-containing beverage outside of the usual meal times (breakfast, lunch and dinner). The snacks consumed can be savory like nuts, cheese, crisps, pretzels and breads; sweet like cakes, yoghurts, fruit, biscuits, chocolate and confectionery, and beverages like fruit juices, squashes, carbonated soft drinks or milk [1]. According to the World Health Organization, adolescence is a stage of development which corresponds roughly to the ages between 10 and 19 years [2]. Adolescence is an important period during which major biological, social, physiological, and cognitive changes take place.

According to nutritional surveys carried out mostly in developed world, many adolescents do not meet dietary requirements for their age group due to inadequate dietary intake of energy and proteins [3, 4]. Some adolescents have problems with dietary excesses resulting in overweight and obesity as well as dietary inadequacies resulting in underweight [4,5]. Many factors influence an individual adolescent’s nutritional needs, food and snack choices which vary between and within individuals overtime [6]. As the growth spurt begins, adolescents begin to eat more as they become nutritionally vulnerable. They face many challenges as they pursue their independence, experience identity crises, seek peer acceptance, and worry about physical appearance, constantly being bombarded with a mixed messages from the media [7]. The media directs advertisements for high-fat and high-sugar foods and snacks at adolescents, while at the same time sells the importance of a perfect body. All these factors including peer pressure, increased hunger often dictates their food choices. Many schools that they attend offer fat-rich, high-sugar snacks and soft drinks in their tuck shops. This in turn competes with school meals. Eating healthy is not always consistent with eating what is always popular. Adolescents rarely think about the long-term benefits of good health and have a hard time relating today’s actions to tomorrow’s health outcomes hence find themselves snacking a lot on junk empty calorie foods[8].

According to [3], adolescents seem to adopt fad diets, and snack a lot. Adolescent girls are very concerned with weight gain, appearance, and social acceptance. In an attempt to reach personal goals of gaining or losing weight, girls may eat dangerously little, select a few items and frequently skip meals. Adolescents also have a common problem of having fat phobia [9]. Adolescents limited food choices consist of French fries,

sugar-sweetened soft drinks and pastries, leaving little room for school meals that are rich nutrient sources [10] [3], [11]. Adolescents gain increased control over their own food choices and often acquire poor dietary patterns such as skipping breakfast and rely on eating fast foods outside home or school. These habits could translate into consumption of energy-dense or nutrient-poor diets that may potentially contribute to overweight [12]. According to [13], nutritional needs of adolescents are higher than those of children because of growth spurt, sexual maturation, changes in body composition, skeletal mineralization and changes in physical activity. This increases total energy needs due to the larger body size. Adolescent males and females differ in their nutritional needs due to their earlier maturation of females and the considerable variability of puberty and nutrient requirements [14] [15].

There is little information that exists about snacking by adolescents in high schools, or how snacking may influence meal consumption. Previous studies have shown that snacking among adolescents is most common in the afternoon [16] [17]. This study focused on snacking and its association with socio-economic characteristics of adolescents in boarding high schools in Nairobi County, Kenya. Nutritional vulnerability by high school adolescents is a common phenomenon due to growth spurt resulting to rapid growth and development. A lot of snacking by adolescents in schools takes place but the level of snacking remains unknown. The extent of snacking depends on the socio-economic background and gender of the adolescent [7]. Snacking usually involves unhealthy foods leading to insufficient nutrient intake and poor nutrition [10]. Amount of pocket money given, peer pressure, hunger, boredom, media pressure, snack availability and affordability may influence students' level of snacking. Adolescents also gain increased control over their own food choices and often acquire poor dietary patterns such as skipping breakfast and relying on eating fast foods or regularly eating meals outside the home or school [4, 12]. These habits could translate into consumption of energy-dense or nutrient-poor diets that may potentially contribute to overweight or underweight respectively [10].

Many nutritional studies that have been conducted in the developing countries have often neglected adolescents. Majority of government policy documents on nutrition do not mention adolescents as they mostly focus on children under five years and women of reproductive age. This may impede benefits already accrued from nutrition improvement for ages 6-59 months and result to intergenerational vicious cycle of malnutrition. Therefore, understanding how existing programs for adolescents reduce malnutrition risks and vulnerabilities, is the foundation for identifying the gaps that need to be addressed for the group aged 13-18 years, a group that is in transition from childhood to young adults. Good nutrition is the foundation of a healthy and strong nation. Based on this information, it is important to conduct this research to find how socio-economic statuses of parents affect snacking levels and therefore dietary intake of macronutrients by adolescents in national boarding high schools. This will help map-out appropriate intervention strategies for stocking school canteens with affordable, adequate and quality snacks; formulate school nutrition policies and holistic canteen management in high schools [4].

The purpose of this study was to contribute new information on snacking and socio-economic characteristics of adolescents in national boarding high schools in Nairobi, Kenya. This study aimed at assessing the level of snacking in association with socio-economic characteristics of high school adolescents aged 13-18 years.

II. Materials and Methods

A cross-sectional, descriptive study was conducted in a population of all adolescents aged 13-18 years in two public national boarding high schools in Nairobi Kenya which were purposively and randomly chosen. Students are admitted from the whole country regardless of students' socio-economic background. Both qualitative and quantitative data were collected and analyzed. Qualitative data were collected through Focus Group discussions (FGDs), Key informant interviews (KII) and personal observations (Details are published elsewhere). Sample size was calculated using the Fishers' formula [18] based on the prevalence of underweight among the school going children aged 11-17 years in Nairobi County, which stands at 35.1% [19] with an attrition allowance of 10% of the sample size. This gave a total of N=290 although a larger sample size of N=357 for ease of sampling procedures in the randomly selected schools. A multistage cluster sampling, gender- and boarding-stratified sampling was used [20]. Proportionate to size method (PPS) was used according to the number of streams and gender. Simple random sampling for the sample size was done from the compiled data from Ministry of Education (M.O.E) and class lists from the schools giving everyone an equal chance of being selected. Probability Proportionate to Size (PPS) method was used to select the sub-sample for the 24-hour recall dietary intake assessment of the population under study. Students from every class in each school were randomly selected giving a total of 36 students. However, five students were flagged off during data cleaning.

A Pre-tested self-administered semi- structured questionnaire accompanied by an explanatory letter of transmittal (showing the purpose of the study, significance of the study, confidentiality), duly signed by the researcher and a consent form was delivered to the students through the school administration. Questionnaire

was preferred over other instruments because it was easier to administer and economical to use in terms of time and money [21]. Socio-demographic and economic characteristics, snacking, dietary intake of protein and energy, water intake, and personal hygiene were collected.

Food Frequency Questionnaire according to [22] was used to collect qualitative data on the frequency of foods eaten, the levels, frequency and timing of snacking. It was also to determine dietary/food intake from the normal school meals. It established the frequency at which certain types of food (those of particular interest in the survey) were consumed over a specified time-frame normally a week or two or monthly. The foods were grouped into seven main food groups: fruits and vegetables; legumes; animal products; cereals; roots and tubers; oils and fats; sugars and snacks. Their frequency of consumption was coded as:

“Frequently consumed”- food item consumed once a week to many times a day.

“Not frequently consumed”- food item consumed no more than twice a month,

“Never –consumed”=food item not consumed at all.

Eight KII comprising of cateress/caterer and cooks from the two schools were selected based on their knowledge on catering/ food production and service. A key informant interview guide [22] was used to collect information on general hygiene of the kitchens, dining hall, the environment, kitchen personnel, foods cooked, food preparation, cooking methods, meals served and food storage.

A total of six FGDs (two from the girls’ school and four from boys’ school) each comprising of 12 to 14 members according to level, number of streams, and students per class in each school to avoid feelings of intimidation. FGD[22] guide was used to collect qualitative data on factors contributing to adolescents’ divergent selection of foods, eating habits, and snacking while in the school and information recorded by the research assistants as the principal investigator moderated the discussions. The FGDs were conducted in a free conducive discussion environment.

The 24-Hour Recall [22] on a sub-sample of 31 students was used to determine the amount of food and snacks consumed in the previous 24 hours and the ingredients contained in the meals. Standard measuring cylinders were used. Using the Nutri-survey software, RDA percentage fulfillment of nutrient intake was established. By disaggregating the students by age and sex, the analyzed values were grouped into inadequate (less than 100%) and greater than or equal to 100% RDA macro-nutrient fulfillment of energy, carbohydrates, fats and protein. In addition, food frequency from both school meals and snacks was assessed to find out the consumption of different food groups by all the students. This is because the requirements for these nutrients differ according to gender and age of the individual. The means were required to determine the average adequacy of protein intake when considering the requirements per kilogram body weight per day.

Research Assistants (RAs) underwent both written and oral interviews and trained on the background, problem statement, purpose and the objectives of the study, ethical issues, and methods of interaction with the respondents, correct use of data collection instruments, techniques and methods, and recording measurements. Only willing high school adolescent students aged 13 to 18 years were included. Unwilling participants and chronically ill students were excluded and replaced with those from the same sex and age.

To ascertain data quality control and assurance, easy-to-understand, clear questions were verified through pretesting for their relevance and reliability. Dietary intake data using a 24-hour recall was collected, cleaned, coded and analyzed Nutri-Survey software. Descriptive statistics (measures of central tendency i.e. mean and measures of dispersion i.e. range, SD, variance for describing the different indicators applied were done. Chi square tests were used to determine whether associations between variables were significant or not.

Socio-demographic data were correlated with snacking levels and frequencies, dietary intake (24hour recall) to establish if there was any relationship. Data from FGDs were analyzed to make baseline information about snacking levels and frequencies by the adolescent students, eating habits and factors influencing their snack choices. For Analytical statistics, cross tabulations between all categorical variables, dietary intakes of energy and protein were performed. Data collected, and analyzed were presented using Tables, and bar-graphs.

Both written and verbal consent were given by the school administration and all the willing participants. The researcher assured all participants on confidentiality of any information collected from them. Throughout the research process, privacy, respect and dignity of all respondents was upheld.

III. Results and Discussions

3.1 Socio-Economic Status of Families of the Students

3.1.1 Distribution of the Adolescents by Province

Out of the sampled population of 352 adolescents students, Nairobi county recorded the highest representation at (26.7%) followed closely by Rift Valley (24.1%) and Eastern (10.5%) respectively. North Eastern (2.0%), Western (6.5%) and Nyanza (7.7%) Counties had the lowest admissions respectively. There were more girls from Nairobi (13.9%), Central (6.0%), and Rift Valley (13.1%) as compared to boys from Nairobi (12.8%), Central (3.7%), Rift Valley (11.0) admitted to national schools.

3.1.2 Distribution of the Respondents by Age

The ages of the students ranged between 13 and 18 years; with a mean age of 15.8 (SD=1.399; variance=1.956). The mean age for girls was 15.9 years, while that for boys was 15.70. There was no significant difference between the mean age of the males and females ($p>0.5$).

3.1.3 Socio-Economic Status of the Households

The socio-economic status of the respondents' families was presumed to influence the level of snacking. The socio-economic status of the students was determined using the occupation of the parents, their property ownership and the pocket money given to them.

3.1.4 Parental status: Respondents by living and missing parents

The results established that 88.5% of the students had both parents alive, while 2.6% had mother deceased, 7.4% had father deceased and 1.5% had both parents deceased. The students who had both parents deceased were being taken care of by guardians who included brothers, aunts, uncles or grandparents.

3.1.5 Occupation of the parent/guardian

Table 1 shows the distribution of parents by occupation as this determines the amount of income available for family members, in turn influences their eating habits. Students whose parents had formal employment were 32% for boys, 30% for girls giving a total of 63.2% of parents in formal employment with regular income. Most parents/guardians obtained their income from self- (19.5%) and formal employment (63.2%) and that only 4.3% of the parents were farmers, although their level of farming was not indicated.

Those in formal employment are considered to be of HSES, considering that their salary is regular; while those self employed in small and medium enterprises (SMEs) were categorized as of middle socio-economic status (MSES). On the other hand, those unemployed, pensioners, farmers, housewives, casual laborers and students were considered to be of low level income as their income was not regular and may vary from time to time. They may therefore not meet the nutritional needs of the respondents adequately, given the fact that these adolescents may not get adequate pocket money to afford snacking while in school. Parents in formal employment could positively influence the eating habits of the adolescents as well as the amount of pocket money given. In this county, we have three socio-economic classes, the high, the middle and the low. Currently, the low socio-economic status (LSES) families form the majority (51.2%) of the population [23].

Table 1: Occupation of parent/guardian

Occupation	Boys		Girls		Total & percent within sample	
	N	%	n	%	n=348 %	
Formal employment	114	32.8	106	30.5	220	63.2
Self-employment	30	8.6	38	10.9	68	19.5
Unemployment	13	3.7	9	2.6	22	6.3
Farmer	8	2.3	7	2.0	15	4.3
Housewife	5	1.4	4	1.2	9	2.6
Casual	5	1.4	4	1.2	9	2.6
Pensions	3	0.8	1	0.3	4	1.2
Student	0	0.0	1	0.3	1	0.3
Total	178	51.1	170	48.9	348	100.00

3.1.6 Property ownership and Socio-economic statuses of the respondents' families

Families that owned vehicles, land, DSTV, Game boy and Ipod were categorized under high socio-economic status (HSES), Television, motorcycle, DVD player, play station under middle socio-economic status (MSES), and those who owned cell phone, radio, cart and bicycle were categorized under low socio-economic status (LSES). Table 2 shows that majority (65.1%) of the families were from middle socio-economic status and 31.5% from LSES while only a small proportion (3.4%) was from the HSES. Slightly more boys (33.5%) than girls (31.5%) are from families of MSES. Almost equal proportions of both boys (16.6%) and girls (15.9%) came from LSES. Both boys and girls come from almost similar socio-economic backgrounds with more boys (33.5%) than girls (31.5%) slightly leaning towards MSES and more girls (15.9%) than boys (15.6%) towards LSES.

Table 2: Socio-economic statuses of the respondents' families

Socio-Economic Status	Boys		Girls		frequency	
	n	(%)	n	(%)	n	(%)
HSES	7	2.0	5	1.4	12	3.4
MSES	118	33.5	111	31.5	229	65.1
LSES	55	15.6	56	15.9	111	31.5
Total	180	51	172	48.9	352	100

3.1.7 Pocket money given according to gender

According to Fig. 1, the study established that all females were given pocket money. About 6% of males, majority of who were orphans, were not given any pocket money. The amount of pocket money given ranged from Ksh50-12,000. Majority of the students received money at the beginning of the term and during mid-term break (girls 49.1% and boys 47.3%), and only at the beginning of the term (boys 43.8%, girls 36.8%). More than half of the boys (57.3%) were given Ksh1000 or less, while 42.8% girls were given the same amount. Significantly more boys (32%) than girls (41.5%) were given more than Ksh 3,000. Only a small percentage of boys (2.0%) and girls (1.9%) were given more than Ksh 5,000 which formed the 3.4% students belonging to HSES. This resonates well with the findings of [24] where healthy patterns of eating were associated with a higher socio-economic position of military men, while lower patterns were associated with several unhealthy eating behaviors.

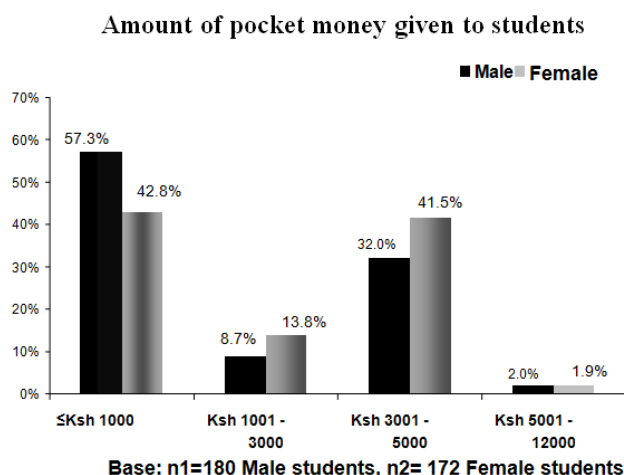


Fig. 1: Amounts of pocket money given to students (Adopted from [4])

3.1.8 Pocket money spending according to gender

Fig. 2 indicates that on average, majority (68.6%) of the students spent their pocket money on snacks. More girls (74.5%) than boys (62.7%) spent their pocket money on snacks. Most girls spend their pocket money on snacks than on any other use. This was followed by clubs (boys 24.7%, girls 9.0%). Only a small proportion (1.9% boys and 1.4% girls) spent the money on buying books and other stationeries. The rest was either saved, spent on transport, buying clothes and/or other personal effects. More females (6.9%) than males (3.8%) saved some of their pocket money

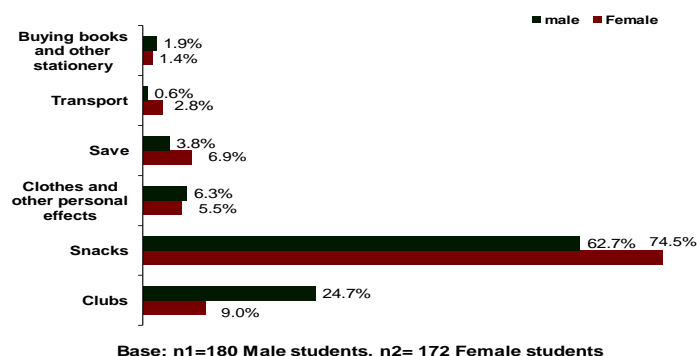


Fig. 2: Distribution of pocket money spending by gender of respondents (Adopted from [4])

3.2 Level of Snacking

The level of snacking among the adolescents was established by finding out which gender snacked most, time of snacking, source of snacks, types of snacks eaten, and pocket money given, days of the week when they snack most.

3.2.1 Snacking Characteristics of the Respondents

3.2.1.1 Snacking by gender

Study shows that out of 352 sampled students, a total of 92.1% indicated snacking, with a slightly higher number of boys (91.4%) than girls (90.7%) snacking.

3.2.1.2 Time of snacking

Table 3 shows, majority (43.1%) of the boys snacked during the morning break, while most (54.1%) of the girls snacked during the afternoon. Table 5 shows more boys than girls snacked during break time, while majority of the girls snacked in the afternoon and just before supper. This could probably be because boys' canteen was open throughout the day, while the girl's canteen was only open at certain specific times in the evening just before supper. It was also observed that at 10 'clock girls consumed a bun and dinking chocolate while boys went without. This may explain why more boys than girls snack in the morning.

Table 3: Time of Snacking

Snacking time	Boys		Girls	
	n	%	n	%
Morning	3	1.9	2	1.3
Break time	69	43.1	15	9.6
Just before lunch	7	4.4	0	0.0
Afternoon	54	33.8	85	54.1
Just before supper	14	8.8	34	21.7
After supper	13	8.1	21	13.4
Total	160	100	157	100

3.2.1.3 Source of Snacks

Table 4 shows that majority (79% boys and 95% girls) of the students from both schools obtained their snacks from the school canteens. Snacks are given by the schools occasionally to individuals as reward for good academic performance or to groups winning events in competitions of co-curricular activities like sports, games and athletics and during public holidays. This is seen as a way of motivating students to excel. These snacks (scones, *mandazi* and biscuits) are very popular among students.

Table 4: Source of snacks

Source of snacks	Boys		Girls	
	n	%	n	%
School canteen	124	79.0	151	95.0
Brought from home	21	13.4	2	1.3
Given by school	0	0	4	2.5
Friends	1	0.6	2	1.3
Kiosks outside school	2	1.3	0	0
Supermarket	9	5.7	0	0
Total	157	100	159	100

3.2.1.4 Types of Snacks Available in the Schools

Different kinds of snacks were available in the canteens of the two schools. The girls' school offered a wider variety of snacks than the boys' school. Healthier snacks were available in the girls' school canteen in form of fruits and nuts, but not found in boys' school canteen. other snacks found in girls' canteen included biscuits, short cakes, deep fried masala sticks(potatoes cut into thin sticks), variety of cookies, Chocolate bar, plain and flavoured milk, bread, sugar, boiled eggs, Ribena(black currant drink) Lucozade (glucose drink),Soft carbonated drinks,Drinking chocolate, Squashes and potato crisps. The boys' canteen contained more of the prepared snacks such as smokies/sausages, boiled eggs, *chapatti* (from refined wheat flour) and *mandazi*, biscuits, short cake, sweets, Soft carbonated drinks, drinking chocolate and Squashes but lacked fruits and variety of snacks[4].

3.2.1.5 Snack Consumption According to Type of Nutrient

Table 5 shows the snack items consumed which were placed into five major categories according to the type of nutrients they provide. 1) Carbohydrates/fat snacks included mandazi, biscuits, cookies, potato sticks, bread, chapatti, potato crisps, cakes, glucose, bites, buns, French fries, sweets, nuts, pop corn, doughnuts and chocolate bars; 2) Protein snacks included sausages/smokies, milk and ice cream; 3) Fruits included apple, mango, avocado, bananas and water melon; 4) Beverages such as drinking chocolate, tea and coffee were available; 5) carbonated soft drinks included commercial juices and cordials, sodas, lucozade (carbonated glucose solution) and ribena (black currant drink). No vegetable snacks were stocked in the school canteens. The girls' school had a few fruits stocked in the canteen. They were not popular (1.1%), may be because they were expensive. There was a very high snacking level during midterm, opening day because students brought snacks from home and during "githeri" and "ugali" meal times. This can be explained by the fact that school meals are not compulsory [4].

Snacks providing starches and fats were consumed by most (58.3%) of the students, whereby more girls (37.2%) than boys (21.1%) were found to snack on starches probably because they were provided at the school canteen. However, more boys snacked on proteins (5.4%) than girls (1.6%). This could be because milk and sausages were sold in the boys' school canteen which was open throughout the day during weekdays and weekends. The Girls' school canteen was open between 5.30 pm to 6.00 pm on weekdays and a few hours during weekends. The girls indicated that there was no need to snack on fruits because they were provided with the school meals. The boys indicated that fruits were not available in the school canteen, moreover, in the FGD, they requested fruits be provided with school meals [4].

Table 5. Categories of snacks consumed, by type of nutrient

Group of snacks eaten ^a	Boys		Girls		Total (N=1591)	
	Mean	(%)	Mean	(%)	Mean	(%)
Carbohydrates/fats (g)	335	(21.1)	593	(37.2)	928	58.3
Protein snacks (g)	86	(5.4)	26	(1.6)	112	7.0
Fruits (g)	6	(0.37)	12	(0.75)	18	1.1
Beverages (ml)	180	(11.3)	172	(10.8)	181	22.2
Carbonated soft drinks (ml)	92	(5.8)	89	(5.6)	352	11.4

Multiple responses allowed. Percentages and totals are based on respondents

3.2.1.6 Means of Snack Quantities Consumed

The students provided information on the amounts of snacks taken (in grams for solids or milliliters for fluids), either by stating the actual weight/volume or by indicating the cost of the snack. A market survey in the school canteens was done to establish the quantities of the said snacks.

Table 6 shows that there was great variation in the quantities consumed by the students. Solids consumed were between 5g and 1835g with a mean of 202.37g, while quantities of fluid snacks ranged between 300 ml -1890mls with a mean of 517.63ml. The mean consumption of solid snacks by girls (206.8g ±188.29) was higher than that of the boys (170.3g). On the other hand, boys consumed more liquids (mean=501.1ml±287.8) than girls (mean= 249.9ml±270.07). This is probably because the school canteen was operational throughout the day and that more liquid snacks were stocked in the boys' canteen. It was noted that both Form 1 and 2 students consumed slightly lower quantities of solids (mean= 410g) than their senior counterparts (Form 3 and 4 classes) who had a mean of 419g. There was however, a different trend with beverages, where the juniors (Forms 1 and 2) had taken relatively larger amounts, with a mean of 1043ml than the seniors (Forms 3 and 4) with a mean of 1015ml [4].

Table 6: Means of Snack Quantities Consumed

Mean quantities Consumed	Boys (n=297) Mean (SD)	Girls (n=344) Mean (SD)
Mean quantities Solid snack (g)	170.3± 152.28	206.8±188.29
Mean quantities Fluid snack (ml)	501.1±287.8	249.85 ±270.07

3.2.1.7 Snacks Consumed and Amount Compared to Pocket Money

Table 7 shows that the amount of pocket money given varied considerably. It also indicates that over half of the boys (57.3%) were given Ksh1000 or less, while 32.0% of boys were given between ksh3000 and ksh5000. Majority of the girls (42.8%) were given more or equal to Ksh1000 and 41.5% between ksh3000 and ksh5000. Students with Ksh1000 or less were found to consume more starches as compared to other snacks. This could be explained by the fact that most carbohydrate snacks are generally cheaper compared to others such as protein snacks, and fruits. Carbohydrate snacks also have a satiety value when compared to other types [4]

Table 7: Mean Distribution of Snack Consumption by Amount of Pocket Money

Grouped types Of Snacks Consumed ^a	Amount of Pocket Money Given (KSH) by Gender								
	≤1000			1001-2000			≥2000		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Starches/fats (g)	144	197	341	77	147	224	57	200	257
Fruits (g)	2	4	6	0	2	2	3	6	9
Proteins (g)	38	10	48	19	3	22	11	9	20
Carbonated									
Soft drinks (ml)	35	22	57	24	23	47	18	32	50
Beverages (ml)	85	67	152	39	42	81	26	50	76
Total	304	300	604	159	217	376	115	297	412

^a multiple responses allowed

3.2.2 Factors Influencing Snacking

In Table 8, results show that the main reasons for snacking were boredom (23.5%), availability of money (20.7%), affordability (16.3) followed closely by hunger (15.4%) and peer-pressure 12.8%). However, more girls (14.1) snacked due to boredom than boys (9.4%), more boys than girls due to peer pressure, more girls than boys due to availability of money. Media influence on snacking was 3.6%. A greater proportion of boys (8.5%) than girls (6.9%) snacked due to hunger. These results differ significantly with a study in a day school in Nairobi Westlands District which showed that the main factors influencing snacking were availability of money, boredom and media (62.5%, 60.8%, 59.2%) respectively [25].

Table 8: Factors influencing snacking habits by gender

Reasons for snacking ^a	Boys		Girls		Responses	
	n	(%)	n	(%)	N	(% of Total)
Boredom	66	(9.4)	99	(14.1)	165	(23.5)
Availability of money	70	(10.0)	75	(10.7)	145	(20.7)
Cheapness (affordability)	53	(7.5)	62	(8.8)	115	(16.3)
Hunger	60	(8.5)	49	(6.9)	109	(15.4)
Peer pressure	57	(8.1)	33	(4.7)	90	(12.8)
Media pressure (influence)	13	(1.9)	12	(1.7)	25	(3.6)
Pleasure	12	(1.7)	9	(1.3)	21	(3.0)
Skipping school meals	7	(1.0)	6	(0.9)	13	(1.9)
Work stress	6	(0.9)	7	(1.0)	13	(1.9)
Curiosity /craving/appetite	0	(0.0)	6	(0.9)	6	(0.9)
Total	344	(49)	358	(51)	702	(100)

^a Multiple responses allowed

NB: Percentages are in parenthesis

More boys than girls snacked in the morning and afternoon probably because the boys' canteen was open throughout the day, while the girl's canteen was open only at certain specific times. As long as they had money and the canteens were open, boys would buy snacks more often than girls. Peer pressure seemed to be a major factor for snacking by boys than girls. Through focus group discussions (FGDs), it was established that

senior classes (forms 3 and 4) snacked more than junior classes (forms 1 and 2). This is a tradition carried forward since colonial period. It was indicated in focus group discussions (FGDs) that sometimes meals were not sufficiently cooked, especially “ugali”, or food was served too cold. In both the girls and the boys’ school, it was indicated that *githeri* and *ugali* meals were unpopular. Some students therefore stayed away from them and ate snacks instead. It was also indicated in FGDs, that snacking levels and skipping of meals increased as one moved from junior to senior classes. The students in Forms 3 and 4 reported heavy snacking and skipping meals more often compared to forms 1 and 2. The reason given was that snacking is perceived to be prestigious and a sign of high social economic status, which the senior students perceived to have acquired. The study established that the most skipped meal was lunch. Eating normal school meals like lunch and at times dinner was also viewed by senior students as a waste of valuable studying time. Snacking habits and food consumption patterns were also influenced by availability of pocket money given to the students and the parents’ socio-economic status.

3.2.7 Snacking by Socio-Economic Status of Families

According to Table 10, out of the total students (315) who were snacking, twelve students (3.8%) came from high SES, 213 students (67.6%) from middle SES and 90 (28.6%) were from low SES. There was a significant difference between snacking among those from high socio-economic status as compared to those from middle and low socio-economic status ($\chi^2=11.896$, P value=0.003). The higher the socio-economic status, the more the students were snacking and vice versa. The more the pocket money given, the more the students were snacking. However, all students (100%) from high SES snacked. About 45.7% of the students snacked just because money was available. There was no significant difference in snacking between those students from low SES and those from Middle SES ($\chi^2=0.375$, P value 0.829). Snacking took place regardless of the S.E.S.

Table 10: Distribution of Snacking by Socio-Economic Status of Families

Socio-Economic Status of Household	Snacking						Total n (%)
	Yes (N=315)			No			
	Boys n (%)	Girls n (%)	Sub-total n (%)	Boys n (%)	Girls n (%)	Sub-total n (%)	
High S.E.S	7(58.3)	5(41.7)	12(100.0)	0(0.0)	0(0.0)	0(0.0)	12(100)
Middle S.E.S	107(47.3)	106(46.9)	213(94.2)	8(3.5)	5(2.2)	13(5.8)	226(100)
Low S.E.S	45(41.65)	45(41.65)	90(83.3)	7(6.5)	11(10.2)	18(16.7)	108(100)
Total (n)	159	156	315	15	16	31	346

NB: Percentages are in parenthesis

IV. Conclusions And Recommendations

4.1 Conclusions and practical implications

The study concluded that majority of the families were from middle and low SES with both boys and girls coming from almost similar socio-economic backgrounds. Snacking took place regardless of their SES.

More boys than girls snacked during break time, while majority of the girls snacked in the afternoon and just before supper.

The greatest source of snacks in both schools was the school canteens with main reasons for snacking being boredom, availability of money, affordability, hunger and peer-pressure. A greater proportion of boys than girls snacked due to hunger suggest that school meals are inadequate.

Most of the students were found to snack on junk foods such as crisps, sweets, chapatti, mandazi, masala sticks and carbonated soft drinks, other than healthy snacks. There were no varieties of snacks, in terms of quality and quantities stocked in the boys’ school canteen.

4.2 Recommendations

Controlled amount of pocket money should be availed to all students regardless of their socio-economic status. Nutrition education on healthy snacks should be conducted to all students to raise their importance to all as this will help develop healthy, positive eating of snacks.

There is need to stock in the school canteens, affordable quality, smaller but adequate quantities and a variety of snacks inclusive of fruits, fresh fruit juices, vegetable snacks, pastries and whole meal bread and limit unhealthy fat-rich and sugar-rich snacks such as sweets and commercial juices..

Since school canteens are the greatest source of snacks consumed in the schools, proper management of school canteens without jeopardizing other school programs would help greatly.

4.3 Suggestions for further research

Since this study was carried out in public national boarding high schools in Nairobi, a comparative study on the same topic could be done on private boarding high schools in Nairobi County as well as in other boarding high schools in other counties.

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