EAS Journal of Nutrition and Food Sciences
Abbreviated Key Title:EAS J Nutr Food Sci
ISSN: 2663-1873 (Print) & ISSN: 2663-7308 (Online)
Published By East African Scholars Publisher, Kenya

Volume-5 | Issue-4 | Jul-Aug; 2023 | DOI:10.36349/easjnfs.2023.v05i04.003

OPEN ACCESS

Original Research Article

Type of School as a Socioeconomic Indicator and its Impact on the Nutritional Status, School Performance, Self-Esteem of Basic School Students (10-12 Years Old) in Khartoum Locality, 2014

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Article History
Received: 09.07.2023
Accepted: 12.08.2023
Published: 22.08.2023

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: Adolescence, a critical phase of rapid physical, social, and psychological growth, encompasses individuals aged 10 to 19 years, Evaluating nutritional status for decades has involved standard methods like dietary, anthropometric, biochemical tests, and clinical signs, often incorporating socioeconomic status (SES) as a key determinant. The study ***aimed*** to assess the nutritional status of students (10-12 years old) attending three types of basic schools whose families' SES was categorized according to school fees paid as high, medium and low. ***Methodology***: This cross-sectional community-based study investigated the influence of family socioeconomic status (SES) on the nutritional status, school performance, and self-esteem of children aged 10-12 years attending basic schools 2014. 210 participants were chosen. Data were collected through anthropometric measurements and a questionnaire covering demography, dietary patterns, self-esteem assessments, and school performance obtained from schools. Statistical package for social sciences version 26 used for analysis. ***Result:*** Data from 210 students (45.2% boys, 54.8% girls) The findings revealed a significant impact of family SES (P=000) on nutritional status, energy and protein intake, school performance, and self-esteem. Low SES families had a higher prevalence of underweight children (66.7%), while high SES families had more overweight and obese children. Those from high SES consumed more animal foods, fast foods, fresh fruits, and vegetables compared to medium and low SES groups. High school grades were predominantly achieved by high and medium SES students, with low SES students obtaining lower grades. Normal-weight students exhibited better school performance and self-esteem than overweight, obese, and underweight students. ***In conclusion***, family SES significantly influenced the nutritional status, school performance, and self-esteem of children attending basic schools. ***Recommendations,*** to ensure students' well-being, monitoring both their nutritional and psychological health is essential. School feeding programs in public schools can benefit low SES students by improving nutrition and cognitive abilities, while integrating a nutrition curriculum can educate them on healthy food choices and balanced diets.

Keywords: Family socioeconomic status, nutritional status, school performance, self-esteem, basic schools, anthropometric measurements, demography, dietary patterns, school fees.

1. INTRODUCTION

Adolescence a critical phase of rapid physical, social, and psychological growth, encompasses individuals aged 10 to 19 years, representing 20% of the global population, with the majority residing in developing countries [1]. The heightened growth rate and changes in body composition during this period lead to increased energy and nutrient requirements, along with non-nutritional factors that can impact growth, such as mobility, extended school hours, and erratic eating behaviors [2]. Evaluating nutritional status for decades has involved standard methods like dietary, anthropometric, biochemical tests, and clinical signs,

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often incorporating socioeconomic status (SES) as a key determinant.

SES encompasses economic and social status distinctions characterizing individuals [3], reflecting access to varying social and economic resources over time [4]. In developing countries, multiple indicators, such as wealth, income, education, housing, and self-reported parameters, are used, leading to inconclusive associations with nutritional outcomes due to measuring different components of SES [5, 3]. As a result, field researches often employ indicators measuring only a few SES components, potentially overlooking critical elements that affect correlation with nutritional outcomes [6].

Food choice is a complex process influenced by individual, social, and environmental factors, contributing to socioeconomic inequalities in food intake. Adolescents exhibit irregular meal consumption, excessive snacking, eating away from home (fast food venues), meal skipping, and dieting [7]. Lower SES individuals in developed countries tend to consume energy-dense foods more frequently, while higher SES counterparts consume more fruits and vegetables [8].

Individuals with low income or education prioritize price over health in food selections, and lower-priced products are often nutritionally poor and energy-dense [9]. Thus by implication, it may be more difficult for individuals with fewer financial resources to take nutritional aspects into account in their food purchasing decisions.

The relationship between family SES, nutritional status, and school performance in Sudan is examined, with studies utilizing components such as family income, food expenditure, house type, source of drinking water, type of toilet, and household assets to categorize SES [10]. Most of the studies carried out in Sudan used one or more of the following components of SES: family income, food expenditure, house type, source of drinking water, type of toilet, household assets i.e. [11] but only [12, 13] used the type of school as an indicator of family SES.

Academic performance significantly influences future educational attainment and overall health, with an associated increase in SES affecting access to healthcare, housing quality, work environment, and lifestyle factors like nutrition and recreation [14].

Self-esteem, an important component of self-concept, is considered crucial for children's academic performance. The self-esteem movement in American schools emphasizes raising self-esteem to improve academic success [15].

Generally, as levels of education increase, there is an associated increase in income and social status. This associated increase in SES affects health by influencing access to health care, quality of housing, work environment and lifestyle factors such as nutrition and recreation and socio-psychological factors such as health awareness and self-esteem [14].

1.2. Problem statement

Socioeconomic status is commonly measured by education, occupation, and income, all of which impact health outcomes, lifestyle behaviors, and dietary choices. The studies conducted in Sudan often used family income, food expenditure, and other indicators to assess SES. For this study arises from the widespread use of traditional SES indicators in Sudan's cross-sectional nutrition studies, resulting in interpretations limited to specific SES components and possible unreliability and insensitivity. Building on the work of [12, 13], who introduced school type as an SES indicator in assessing nutritional status among adolescent girls, this study aims to test the hypothesis proposed by [13]. By evaluating three types of basic schools (international, private, and public) categorized by the fees paid, reflecting diverse socioeconomic statuses of families, the research intends to assess the nutritional status of students (10-12 years old) and its relationship with SES.

1.3. The justification (Rationale)

In the developing countries, [16] observed in Panchkula, India, that among 12-15 years old school children, private school adolescents are 2.08 times more likely than public school ones to be overweight and those with a high SES were highly likely to be obese. In addition [17] noted that in the city of Quetzaltenango, Guatemala, that overweight was twice and obesity five times among children from high SES than those from low SES.

1.4 Objectives

General Objective

To assess the nutritional status of students (10-12 years old) attending three types of basic schools categorized by family SES based on school fees (high, medium, and low).

Specific Objectives

- To determine the impact of SES on the nutritional status.
- To assess the adequacy of energy and protein intakes in relation to SES.
- To investigate the influence of SES on school performance and self-esteem.
- To identify potential differences in the effects of nutritional status and SES on the above parameters.

2. METHODOLOGY

2.1. Study Design

This was a community-based cross-sectional study among students (10-12yrs) Khartoum locality 2014.

2.2. Study Area

Three basic schools in Khartoum Locality were chosen according to fees paid/year to reflect different socioeconomic status:-

- Summmit International School, Alamarat area, School fees (10000 SDG).
- Albyan Private School, Alriyad area, School fees (2000 SDG).
- Alhamadab Primary School, Alshajara area, School fees (500 SDG).

Students were classified as from high socioeconomic status families (1), medium (2) and low (3).

2.3. Study Population

All students (boys and girls) who were 10-12 years old were enrolled in this study.

2.4. Sample Size: A total of 210 populations were determined as participants.

2.5. Sample Technique: Convenience sampling technique has been used.

2.6. Data Collection Technique

Collected by a pre-tested questionnaire that included demographic data (age, gender, type of school), anthropometric measurements (weight, height), dietary pattern (24 hour recall, dietary habits and food frequency questionnaire), school performance (from school records) and self-esteem test.

2.7. Data Analysis:

Data obtained was analyzed using SPSS computer program and the results obtained presented in figures and tables format. Chi- square analysis was used to identify significant differences between students in the three schools.

2.8. Ethical Considerations:

Ethical clearance was obtained from the State Ministry of Education, Principles of schools /Parents of students. The objective of the study was explained to parents and participants, privacy and confidentiality of collected information was ensured at all level.

RESULT

Table 1: Classification of students by age, sex and income status

Parameter	Description	Frequency	Percent
Age (years)	10	56	26.7
	11	84	40.0
	12	70	33.3
Gender	Male	95	45.2
	Female	115	54.8
Families' income	High	50	23.8
	Medium	88	41.9
	Low	72	34.3

Table 1 shows that 40% of the students were at age 11 years, 33.3% at age 12 years and 26.7% at age 10 years. 54.8% were females and 45.2% were males. The majority (41.9%) were from medium income families (private schools), 34.3% from low income families (public schools) and 23.8% from high income families (international schools).

Table 2: The nutritional status of all the students

Status	Indicator	Description	Frequency	Percent
Present	**BMI-age**	**Underweight**	75	35.7
		Normal	81	38.6
		Overweight	34	16.2
		Obese	20	9.5
Past	**Height-age**	**Normal**	173	82.4
		Mildly stunted	22	10.5
		Moderately stunted	15	7.1

The nutritional status of the students is shown in Table 2. A majority (38.6%) had normal weight, 35.7% suffered from underweight, 16.2% from overweight and 9.5% from obesity. Those with normal height-for-age were 82.4%, 17.6% suffered from stunting (7.1% moderate cases).

Table 3: Impact of present nutritional status on school performance

Status	School performance grades [% (n)]				Total
	Poor	Good	Very good	Excellent	
Normal	11.1 (9)	25.9 (21)	34.6 (28)	28.4 (23)	100.0 (81)
Overweight	11.8 (4)	32.3 (11)	23.6 (8)	32.3 (11)	100.0 (34)
Obese	10.0 (2)	40.0 (8)	30.0 (6)	20.0 (4)	100.0 (20)
Underweight	61.3 (46)	30.7 (23)	8.0 (6)	-	100.0 (75)
Total	29.0 (61)	30.0 (63)	22.9 (48)	18.1 (38)	100.0 (210)

(p<0.000)

Table 3 shows the impact of the present nutritional status on the school performance of the students. The majority (59.0%) scored low grades (poor/good) and 41.0% scored high grades (very good/excellent).

Most of the high grades were obtained by the students who had normal weight (59.3%) followed by those who suffered overweight (22.1%), the obese (8.6%) and finally the underweight sufferers (7%).

Table 4: Impact of present nutritional status on self-esteem

Self-esteem	Nutritional status [% (n)]				Total
	Normal	Overweight	Obese	Underweight	
Normal	76.5 (62)	67.6 (23)	25.0 (5)	30.7 (23)	53.8 (113)
Low	23.5 (19)	32.4 (11)	75.0 (15)	69.3 (52)	46.2 (97)
Total	100.0 (81)	100.0 (34)	100.0 (20)	100.0 (75)	100.0 (210)

(p<0.000)

Most of the students (53.8%) had normal self-esteem; the rest (46.2%) had low self-esteem according to the Rosenberg test. Normal weight students had higher rate of self-esteem and the overweight ones (76.5% & 67.6% respectively) compared to the obese and underweight (25.0% vs 30.7%). Similarly, the obese and underweight students suffered from low self-esteem; the obese scored a higher rate (75% vs 69.3%).

Table 5: Impact of the energy intake on present nutrition status

Status	Energy intake [% (n)]			Total
	Inadequate	Adequate	Excessive	
Normal	32.1 (26)	67.7 (50)	6.2 (5)	100.0 (81)
Over weight	2.9 (2)	50.0 (17)	44.1 (15)	100.0 (34)
Obese	0 (0)	20.0 (4)	80.0 (16)	100.0 (20)
Underweight	92.0 (69)	6.7 (5)	1.3 (1)	100.0(75)
Total	46.2 (97)	36.2 (76)	17.6 (37)	100.0 (210)

Most of the obese (80.0%) and 44.0% of the overweight students consumed excessive energy intake (Table 5). Inadequate energy intake was recorded for some normal weight students (32.1%) and for most of those who suffered from underweight (92.0%).

The difference in energy intake between the students from the three income categories was highly significant (P<0.000).

Table 6: Impact of the protein intake on present nutrition status

Status	Protein intake [% (n)]			Total
	Inadequate	Adequate	Excessive	
Normal	29.6 (24)	44.4 (36)	25.9 (21)	100.0 (81)
Over weight	14.7 (5)	35.3 (12)	50.0 (17)	100.0 (34)
Obese	5.0 (1)	35.0 (7)	60 (12)	100.0 (20)
Under weight	88.0 (66)	9.3 (7)	2.7 (2)	100.0 (75)
Total	45.7 (96)	29.5 (62)	24.8 (52)	100.0 (210)

Excessive protein intake was highest (60.0%) among the obese students and decreased with decreasing body weights (50.0%, 25.9%, and 2.7% respectively) as shown in Table 6). Most of the underweight students (88.0%) and 29.6% of the normal weight students consumed inadequate dietary protein.

The difference in protein intake between the students from the three income categories was highly significant (P<0.000).

Table 7: Impact of self-esteem on school performance

Self-esteem	School performance [% (n)]				Total
	Poor	Good	Very good	Excellent	
Normal	13.3 (15)	23.0 (26)	32.7 (37)	31.0 (35)	100.0 (113)
Low	47.4 (46)	38.2 (37)	11.3 (11)	3.1 (3)	100.0 (97)
Total	29.0 (61)	30.0 (63)	22.9 (48)	18.1 (38)	100.0 (210)

(p>0.000)

Those who showed normal self-esteem scored higher school performance grades than those who showed lower self-esteem (63.7% vs 14.4%) as shown in Table 5.

In contrast, students who showed low self-esteem score more low than high grades (85.6% vs 14.4%).

Table 8: Impact of family income on the present nutritional status [% (n)]

Income	Underweight	Normal	Overweight	Obese	Total
High	6.0 (3)	46.0 (23)	26.0 (3)	22.0 (11)	100.0 (50)
Medium	25.0 (22)	44.3 (39)	22.7 (20)	8.0 (7)	100.0 (88)
Low	69.4 (50)	26.4 (9)	1.4 (1)	2.8 (2)	100.0 (72)
Total	35.7 (75)	38.6 (81)	16.2	9.5 (20)	100 (210)

Underweight incidence was lowest among students from high income families (6.0%), increasing to 25.0% among those from medium income families and was highest (69.4%) among those from low income families (Table 8).

Students from high income families showed higher incidence of overweight and obesity compared to those from medium income families (26.0% and 22.7% vs 22.0% and 8.0% respectively). As for those from low income families, very few suffered from overweight (1.4%) or obesity (2.8%).

Family income significantly affected the present nutritional status of the students (P<0.000).

Table 9: Impact of family income on the past nutritional status

Income	Normal	Stunting [% (n)]		Total
		Mild	Moderate	
High	78.0 (39)	16.0 (8)	6.0 (3)	100.0 (50)
Medium	86.4 (76)	3.4 (3)	10.2 (9)	100.0 (88)
Low	86.4(58)	15.3 (11)	4.2 (3)	100.0 (72)
Total	82.4 (173)	10.5 (22)	7.1 (15)	100.0 (210)

Stunting incidence was 17.6% of whom 7.1% were moderately stunted, however, none of the students was severely stunted (Table 9).

A similar rate of mild stunting was noticed among those from high and low income families (16.0% and 15.3%). Moderate stunting was highest among those from medium income families (10.2%) but similar rates were also noticed among those from high and low income families (6.0% and 4.2% respectively).

Table 10: Impact of family income on energy intake

Family income	Energy intake [% (n)]			Total
	Inadequate	Adequate	Excessive	
High	18.0 (9)	38.0 (19)	44.0 (22)	100.0 (50)
Medium	34.6 (30)	50.0 (44)	15.9 (14)	100.0 (88)
Low	80.6 (58)	18.0 (13)	1.4 (1)	100.0 (72)
Total	46.2 (97)	36.2 (76)	17.6 (37)	100.0 (210)

Energy intake by the students was: inadequate by 46.2%, adequate by 36.2% and excessive by 17.6% (Table 10).Inadequate energy intake increased by decreasing SES (18.0%, 34.1%, 80.6% respectively) while excessive energy intake increased with increasing family income (44.0%, 15.9%, 1.4% respectively).

Family income significantly affected (P<0.000) students' energy intake.

Table 11: Impact of the family income on protein intake

Family income	Protein intake [% (n)]			Total
	Inadequate	Adequate	Excessive	
High	20.0 (10)	50.0 (25)	30.0 (15)	100.0 (50)
Medium	29.5 (26)	34.1 (30)	36.4 (32)	100.0 (88)
Low	83.3 (60)	9.7 (7)	6.9 (5)	100.0 (72)
Total	45.7 (96)	29.5 (62)	24.8 (52)	100.0 (210)

(p<0.000)

Most of the students (45.7%) took inadequate protein while 24.8% took excessive amounts (Table 11).

Inadequate protein intake increased with decreasing family incomes (20.0%, 29.5%, and 83.3%). Students from medium family incomes scored higher protein intakes than those from high family incomes (36.4% vs 30.0% respectively), however those from families of low income scored the least (6.9%).

Table 12: Impact of the family income on foods consumed daily

Food / Daily (%)	Family income		
	High	Medium	Low
Dairy products	88	86.4	77.8
Meat, fish, poultry, eggs	74	69.3	40.3
Legumes	74	70.4	60
Fresh fruits	70	60.2	30.5
Fresh vegetables salad	76	45.4	45.8
Natural juices	66	51.1	30.5
Artificial juices	62	46.4	27.8
Soft drinks	58	44.3	29.2
Fast foods	66	48.8	22.2
Salty snacks	68	45.5	36.1
Andomi	76	51.1	31.9

(p<0.000)

Consumption of animal proteins (dairy products, meat/fish/poultry/eggs), fresh fruits and vegetables salad, natural juices, soft drinks, fast foods, salty snacks and andomi decreased with decreasing income (Table 12).

Table 13: Impact of family income on snacks intake during the school day

Family income	Snacks intake during school day [% (n)]		Total
	1-2	>2	
High	46.0 (23)	54.0(27)	100.0 (50)
Medium	80.7 (71)	19.3(17)	100.0 (88)
Low	51.4 (37)	48.6(35)	100.0 (72)
Total	62.4 (131)	37.6(79)	100.0 (210)

The majority of the students (62.4%) took 1-2 snacks/day at school while 33.3% took 3-4 snacks/day (Table 13). Snacks included soft drinks, chips and/or sweets.

A majority of those from high income families (52%) took 3-4 snacks. 1-2 snacks were taken by most of those from medium income families (80.7%) and a majority (51.4%) by those from low income ones.

Table 14: Impact of family income on the school performance

Family income	School performance grades [% (n)]				Total
	Poor	Good	Very good	Excellent	
High	8.0 (4)	38.0 (19)	28.0 (14)	26.0 (13)	100.0 (50)
Medium	20.4 (18)	27.3 (24)	31.8 (28)	20.4 (18)	100.0 (88)
Low	54.2 (39)	27.8 (20)	8.5 (6)	9.7 (7)	100.0 (72)
Total	29.0 (61)	30.0 (63)	22.8 (48)	18.1 (38)	100.0 (210)

Table 14 shows the impact of the family income on school performance of the students. The later was graded as low (poor/good) and high (very good/excellent).

The majority of the students (59%) showed low grades. Within each income category, the highest incident (82.0%) was scored by the low income category while those from higher incomes had similar scores.

Also students from high and moderate incomes' families had similar high scores while those from low income category scored lowest (18.1%).

Family income had a highly significant performance (P<0.000) on the school performance of the students.

Table 15: Impact of the family income on participates in sport activities

Family income	Participation in sport activities [% (n)]			Total
	Yes	No	Sometimes	
High	54.0 (27)	12.0 (6)	34.0 (17)	100.0 (50)
Medium	31.8 (28)	12.5 (11)	55.7 (49)	100.0 (88)
Low	18.1 (13)	9.7 (7)	72.2 (52)	100.0 (72)
Total	32.4 (68)	11.4 (24)	56.2 (118)	100.0 (210)

Regular and irregular participation in sport activities by the students were 32.4% and 56.2% respectively (Table 15).

Regular sport participation decreased with decreasing family income (54.0%, 31.8%, and 18.1% respectively) while irregular participation increased with decreasing family income (34.0%, 55.7%, and 72.2% respectively).

Table 16: Impact of the family income on leisure time (TV, video games, computers)

Family income	Hours/day [% (n)]			Total
	1-2	3-4	>5	
High	32.0 (16)	56.0 (28)	12.0 (6)	100.0 (50)
Medium	60.2 (53)	32.9 (29)	6.8 (6)	100.0 (88)
Low	44.4 (32)	41.7 (30)	13.9 (10)	100.0 (72)
Total	48.1 (101)	41.4 (87)	10.5 (22)	100.0 (210)

Table 16 shows leisure hours/day spent sitting in front of TV, video-games and/or computers.

The majority from high income families sat for 3-4 hours while those from medium and low income families for 1-2 hours (60.2% and 44.4% respectively).

4. DISCUSSION

This study was undertaken to assess the nutritional status of boys and girls (10-12 years old) attending basic schools in Khartoum Locality and the influence of their families SES on their nutritional status, school performance and self-esteem. Families' SES was determined according to the school fees paid for their children into high (international school), medium (private school) and low (public school) as described by [10].

All students within the 10-12 years old age range attending the three schools were included in this study, totaling 210 and categorized as from high (23.8%), medium (41.9%) and low (34.3%) SES families. There were more girls than boys (+9.6%) in the sample.

One-third of the students suffered from underweight (thinness), a slightly higher ratio had normal weight, however, up to 25.7% were either overweight or obese children. Wasting incidence in this study was much higher than that reported for secondary school students in Bahri Locality [11] or Ombada Locality [13]. Stunting incidence was lower than that reported for Bahri Locality and higher than the rate found in Ombada Locality.

Families SES significantly (P=0.000) affected the nutritional status of the students as most of the underweight students (69.4%) were from low SES families. Similarly, a majority of the overweight and most of the obese were from high SES families. This is in agreement with [12, 13] also found that underweight was common among public school students and overweight among private school students in the secondary education. In this study it was found that those from high SES families were 2.75 times more likely to be obese compared to those from medium status families while those from low status families are 11.5 times likely to be underweight compared with those from high SES families or 2.77 times more likely to those from medium SES families. That school children from high SES are more prone to overweight and obesity was also concluded by [17] in Quetzaltenango, Guatemala, and [16] in Panchkula, India.

Body weight is an indicator of energy intake and reflects the nutritional status; thus energy intake reflects the nutritional status. Most of the students from low SES families had inadequate energy intake (80%) hence suffered from underweight; half of those from

medium SES families had adequate energy intake hence had normal weight and the majority from high SES families had excessive energy intake so suffered from overweight and obesity.

Similarly for protein intake as inadequate protein intake was recorded for 83%, 29.5% and 20.0% for students from decreasing SES families, in addition, the majority of underweight students had inadequate protein intake [17] reported that obesity among children from high income families indicates that they are undergoing the 'nutrition transition'. In many developing countries [as previously happened in developed ones], with the increase in income there will be a shift in foods consumed from calories of carbohydrates rich staples (cereals, roots, tubers) to calories from animal sources, vegetable oils and sugars [18].

In this study expensive food items [meat, fish, poultry, eggs, fresh fruits, salads, fast foods, soft drinks etc] were more consumed by students from high SES families than those from medium ones; more from the later than those from low SES families. This is in line with [18, 17]. That they are undergoing the 'nutrition transition' because of better family SES than their counterparts. However, in this study nutrient dense foods were more consumed by those from high SES families than lower status ones which is logical since they are more expensive in whatever form they were consumed including fast foods; this is contrary to the situation in developed countries where fast energy dense foods are cheaper so more consumed by those from low than high SES [19, 9].

This result agreed with [13] that private school girls had significant more animal protein foods and with [8] that more fruits and fresh vegetables were consumed by those from higher SES groups compared to lower ones.

The difference in dairy products intake was not as large as that for other items which is probably due to the Sudanese population habitual consumption of dairy products [fresh milk, yogurt, white cheese].

High grades (very good or excellent) in school performance were scored by more than 50% of those who had normal weight, overweight or obese in descending order but by only 8% who suffered from underweight. Similarly, high grades were obtained by more than 50% of those from high and medium SES families compared to only 18.0% from those from low SES families; a highly significant difference (P=0.000). This result is in accordance with [20] who reported that high SES led to positive attitudes towards schooling leading to high academic achievement [rich>middle>poor] due to inequalities of resources and that every SES level reflected the quality of nutrition provided. This study supported the last statement also.

The study showed a relationship between self-esteem and school performance; students with normal self-esteem scored more high grades than those with low self-esteem (63.7% vs 14.4%) which is in accordance with [21] that high self-esteem may foster the confidence to tackle difficult problems and to derive satisfaction for progress and success. In addition, this study showed that students with normal weight had better self-esteem than those who were overweight and that both had better self-esteem than those who were obese or underweight.

The impact of family SES on the life style of the students was also investigated. Regular sports activities decreased with decreasing SES of the families probably because most of the international and private schools had sport activities within the schooling hours; this is rare in public schools. Also those from high SES families spent more hours sitting in front of TV, video-games and/or computers than those from medium or low SES families. This shows that students from high SES spent more leisure hours.

5. CONCULATION

The study included students of varying SES: high, medium, and low. Nutritional status revealed proportions of normal weight, underweight, overweight, and obese. SES significantly impacted nutritional status, with more overweight and obese students from high SES and most underweight from low SES. Energy intake was significantly affected by SES, with high SES students having excessive intake and low SES students mostly inadequate intake. High SES students consumed more animal proteins, fresh fruits, and vegetables. Self-esteem showed a significant relationship with nutritional status and school performance.

6. RECOMMENDATION

The Ministry of Education should do Periodical monitoring and evaluation of the nutritional status and psychological status of all students and Introduction of school feeding programs in public schools to improve the nutritional status and cognitive abilities of students from low SES families also Introducing a nutrition curriculum to raise the awareness of students about healthy foods.

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Cite This Article: Braa Ahmed & Bahieldin I Magboul (2023). Type of School as a Socioeconomic Indicator and its Impact on the Nutritional Status, School Performance, Self-Esteem of Basic School Students (10-12 Years Old) in Khartoum Locality, 2014. *EAS J Nutr Food Sci*, *5*(4), 102-110.