NUTRATIONAL ASSESSMENT OF ADOLESCENTS IN ERBIL CITY

A STUDY IS SUBMITTED TO THE COUNCIL OF THE DEPARTMENT OF NURSING IN ERBIL MEDICAL TECHNICAL INSTITUTE IN PARTIAL FULFILLMENT OF THE REQUIRMENTS FOR THE DEGREE OF TECHNICAL DIPLOMA IN NURSING FOR THE ACADEMIC

YEAR 2023-2024

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I certify that this study was prepared under my supervision at Erbil Medical Technical Institute in partial fulfillment of the requirements for the degree of technical diploma.

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We the members of the evaluation committee certify that after reading this study and examining the students in its contents, it is adequate for the award of the degree of Technical Diploma in Nursing for the academic year 2023-2024

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This study is approved by the scientific committee of the department.

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TABLE OF CONTENTS

Contents	Pages
Chapter on	6
1.1- Introduction	7
1.2- Objectives	8
1.3- Child injury	9
1.4- Causes of injury	10
1.5- Types of injury	9-10
1.6-Home safety and prevention	10-13
Chapter two: Methodology	14
2.1. Design of the study	15
2.2. Setting and time of the study	15
2.3. Sample of the study	15
2.4. Instrument of the study	15
2.5. Statistical analysis	15 -16
Chapter Three: Results and Discussion	17-
3.1. Table (1): Social – Demographic Data of the Child .	18
3.2. Table (2): – Demographic Data of the mother.	19
3.3. Table (3): Types of child injury	20
Chapter Four: Conclusion and Recommendations	21
Conclusion	22
Recommendations	23

Chapter one Introduction and literature Review

1.1. Introduction:

Poor nutrition starts before birth, and generally continues into adolescence and adult life and can span generations. Chronically malnourished girls are more likely to remain undernourished during adolescence and adulthood, and when pregnant, are more likely to deliver low birth-weight babies. Epidemiological evidence from both developing and industrialized countries now suggests a link between foetal under-nutrition and increased risk of various adult chronic diseases (ACC/SCN, 2000). Nutrition challenges continue throughout the life cycle, particularly for girls and women (Fig. 1).
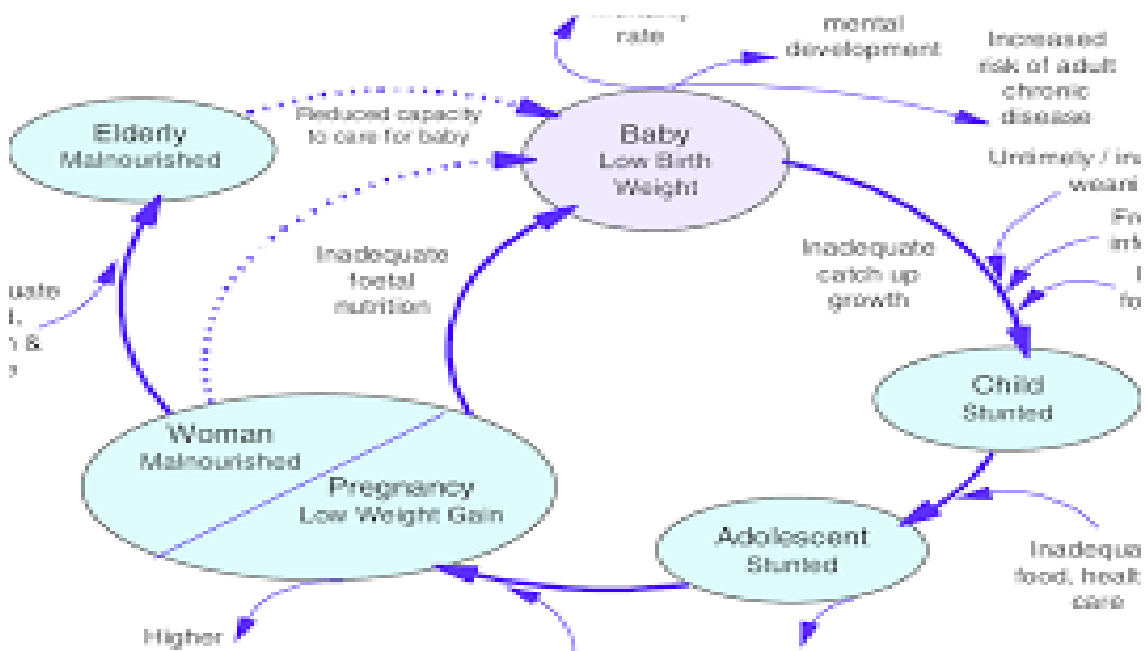
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Adolescent Nutrition: A Review of the Situation in Selected South-East Asian CountriesIt is thus imperative to prevent malnutrition at every stage of the life cycle. Investing in nutrition throughout the life cycle will have both short-

term and long-term benefits of economic and social significance, including large savings in health care costs, increased educability and intellectual capacity, and increased adult productivity (ACC/SCN, 2000). So far, most of the interventions have either focused on children aged 0-5 years or on pregnant women, and, to some extent on lactating women. However, not much attention has been paid to adolescents by nutrition-related programmes in developing countries. WHO defines adolescence as the segment of life between the ages of 10-19 years. Adolescents are an in-between group, with some nutrition problem commonalities with children and some with adults. In addition, there are adolescent-specific issues that call for specific strategies and interventions. If adolescents are well nourished, they can make optimal use of their skills, talents and energies today, and be healthy and responsible citizens and parents of healthy babies tomorrow. To accomplish such a task, and in order to break the intergenerational cycle of malnutrition, a special focus for overcoming adolescent malnutrition is needed. This task can be accomplished if a special focus is given to overcome malnutrition in adolescents and break the intergenerational cycle of malnutrition. As a first step, a review of the nutritional status of adolescents living in the South-East Asia Region has been prepared to:

• Identify the nutrition problems and risks faced by adolescents.

• Highlight the nutrition problems and risks that can be best managed during adolescence, and therefore call for targeted action.

• Identify and suggest strategic approaches to address these nutritional problems.

1.2. **Objective:**

1-To assess nutritional statuse in adolescents.

1.3. <u>Nutritional Needs During Adolescence</u>

In adolescence, a second period of rapid growth may serve as a window of opportunity for compensating for early childhood growth failure, although the potential for significant catch-up is limited. Adult size, measured by height and weight, also reflects an entire range of physiological measurements that determine work capacity, safety, ease of childbirth and decreased obstetric risk to mother and decreased incidence of low birth weight. Survival itself, for both mother and child is affected by maternal body size. Research evidence suggests that optimal nutrition during the brief period of pre-pubertal growth spurt, some 18 to 24 months immediately preceding menarche, results in catch- up growth from nutritional deficits suffered earlier in life (Spear, 2002). During adolescence, the relatively uniform growth of childhood is suddenly altered by an increase in the velocity of growth (Fig. 2). The graph shows the height attained and velocity curves of a boy and a girl. Growth is faster than at any other time in the individual's life except the first year (Brasel, 1982). Over 80% of adolescent growth (attained weight and height) is completed in early adolescence (10-15 years), with a marked deceleration in weight and height velocity in the post-pubertal phase (Srikantia, 1989). This adolescent growth spurt is also associated with cognitive, emotional and hormonal changes. An important feature is the great variability that exists in the timing and magnitude of the growth spurt both between genders and among individuals (Tanner and Davis 1985, Tanner 1987). The girl begins her adolescent growth spurt at an average of about 10 years and grows at peak velocity at about 12 years. These ages vary from country to country, being lowest in developed countries and

highest in poorest countries. The boy starts his adolescent growth spurt around 12 years of age and in a year or two overtakes the girl.

1.4. __Nutritional Needs of Boys and Girls the Same__

The nutritional needs of males and females of the same age differ little in childhood but diverge after the onset of the pubertal growth spurt. After puberty, the differences in nutrient needs persist (Table 6). The reason for the sex differences in nutrient recommendations after the age of 10 include earlier maturation of females (protein requirements of 11-14 year old girls are higher than the boys of the same age group but are much less for 15-18 year old girls as compared to their male counterparts), and variations in physiological needs for some nutrients by sex e.g., difference in the requirement of iron. Besides differences in height and weight, boys gain proportionately more muscle mass than fat as compared to girls. They experience increased linear growth to produce a heavier skeleton and develop greater red blood cell mass than girls. Girls on the other hand have more fat than muscle tissues. These differences in body composition have important implications for nutritional needs of male and female adolescents as shown in Table 6.

__Table 6: Recommended dietary allowances (RDA) for selected nutrients during adolescenc__

Recommended Dietary Allowance of Nutrientsfor adolescents in 24 hours

	MALE			FEMALE		
	10-12 Yr	13-15 Yr	16-18 Yr	10-12 Yr	13-15 Yr	16-18 Yr
Energy (Kcal)	2200	2500	2700	2000	2100	2100
Protein (gms)	54	70	78	57	65	63
Calcium (Mg)	600	600	500	600	600	500
Iron (Mg)	34	41	50	19	28	30

Chapter two
Methodology

Patient and Methods

2.1. Design of the study:

A quantitative (purposive sample consists from 180 students) descriptive study conducted to assess nutritional statuse in adolescents who attending at school in Erbil city

2.2. Setting of study:

This study was conducted at Shyaw and Hawkary school in Erbil city during the period of January, February 2023.

2.3. Sample of the study:

A non-probability (purposive sample) obtained through taking interview students who admitted to Shyaw and Hawkary school in Erbil city selected as study sample.

2.4. Method and tool of data collection

A questionnaire constructed by investigator then reporting for data collection. It was comprised of two major parts.

part **1** : to socio demographic characteristics of parents and students.

Part **2**: to assess nutritional statuse in adolescents who attending at school in Erbil city

2.5. Ethical consideration:

An official permission was be obtained from directorate of health through, Erbil Medical Technical Institute for data collection. Also oral consent was be taken from students of and Researchers will promise to keep the students' information, confidential, and use these data for this study only then explain the purpose of this study to each participant.

2.6. <u>Statistical analysis:</u> Data was analyzed through using SPSS version 23.

Through application of frequencies and percentage

Chapter three
Results

3.1 Introduction

Table 1 Descriptive Statistics for Demographic Questionnaire

		Frequency	%
Age	11 years	1	0.6
	12 years	15	8.3
	13 years	**66**	**36.7**
	14 years	44	24.4
	15 years	26	14.4
	16 years	17	9.4
	17 years	9	5.0
	18 years	2	1.1
Gender	Male	2	1.1%
	Female	178	**98.9%**
Mother level of education	Illiterate	46	25.6%
	Elementary	55	**30.6%**
	Secondary	36	20.0%
	High School	20	11.1%
	University	23	12.8%
Father level of education	Illiterate	26	14.4%
	Elementary	46	25.6%
	Secondary	53	**29.4%**
	High School	27	15.0%
	University	28	15.6%
Residence	City	169	**93.9%**
	Near city	11	6.1%
BMI Group	Underweight	46	26.0%
	Normal weight	116	**65.5%**
	Overweight	14	7.9%
	Obese	1	0.6%

Table 1shows the descriptive statistics for all demographic questions such as age, gender, Mother level of education, Father level of education, Residence, and BMI Group.

Most of the participants are aged 13 years (36.7%) followed by 14 years (24.4%), 15 years (14.4%), 16 years (9.4%), 12 years (8.3%), 17 years (5%), 18 years (1.1%), and 11 years (0.6%) respectively. The percentage of male (98.9%) is higher than the percentage of female's participants (1.1%). Most of the mothers have elementary certificate (30.6%) since most of the fathers have graduated from elementary school (29.4%) as shown on figure 1.

Most of the patients are normal of BMI (65.5%) followed by underweight (26%), over weight (7.9%), and obese (0.6%) respectively since none of the patients are underweight (0%) as shown on figure4 as well as their average of BMI are 30.62. Furthermore, the percentage of people who are living in city (93.9%) rather than (6.1%).
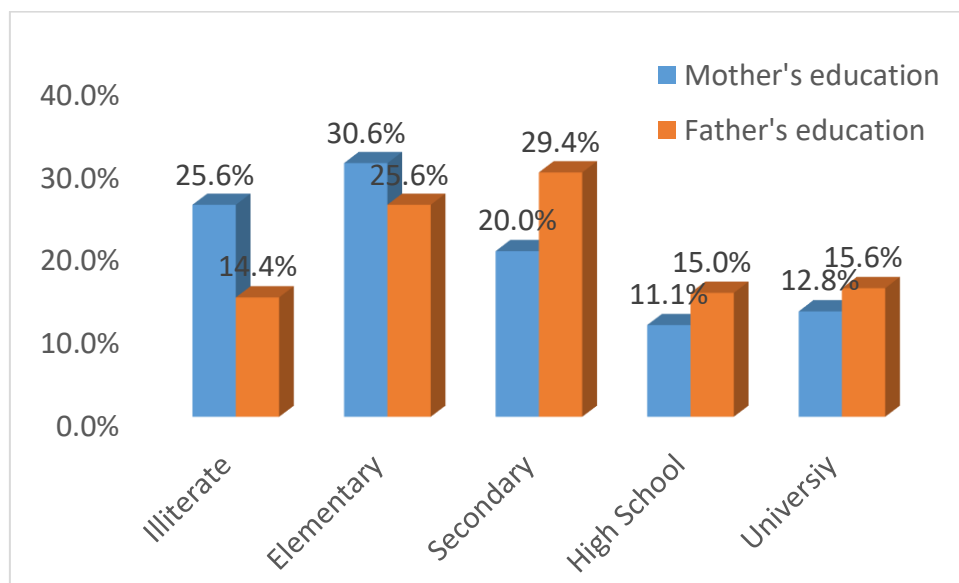
Figure1 Percentage between education of father and mother

Table 2 Descriptive Statistics for each of the different activities

	Never		Rarely		Sometimes		Most of the time		Always		Mean	SD
	F	%	F	%	F	%	F	%	F	%		
1. I plan my meals so that they are healthy	29	16.1%	26	14.4%	70	38.9%	27	15.0%	28	15.6%	2.99	1.253
2. I read about nutrition in books.	61	33.9%	41	22.8%	54	30.0%	15	8.3%	9	5.0%	2.28	1.163
3. I choose to drink soda instead of water.	73	40.6%	37	20.6%	34	18.9%	29	16.1%	7	3.9%	2.22	1.244
4. I study food labels to learn about nutrients in food.	29	16.1%	43	23.9%	48	26.7%	31	17.2%	29	16.1%	2.93	1.306
5. I learn about healthy food from watching TV.	30	16.7%	28	15.6%	52	28.9%	51	28.3%	19	10.6%	3.01	1.239
6. I suggest healthy foods for my family to buy.	17	9.4%	14	7.8%	41	22.8%	59	32.8%	49	27.2%	3.61	1.230
7. I eat foods that I know are good for me even if I don't like them.	28	15.6%	37	20.6%	30	16.7%	34	18.9%	51	28.3%	3.24	1.451
8. I try new foods.	10	5.6%	22	12.2%	39	21.7%	51	28.3%	58	32.2%	3.69	1.201
9. I ask my teacher about healthy food to eat.	44	24.4%	38	21.1%	44	24.4%	27	15.0%	27	15.0%	2.75	1.374

10. I eat foods containing iron.	10	5.6%	18	10.0%	50	27.8%	48	26.7%	54	30.0%	3.66	1.169
11. I choose to eat foods that contain vitamins.	8	4.4%	10	5.6%	42	23.3%	49	27.2%	71	39.4%	3.92	1.118
12. If I think I'm gaining too much weight I eat fewer sweets.	36	20.0%	34	18.9%	34	18.9%	29	16.1%	47	26.1%	3.09	1.482
13. I ask my grandparents questions about healthy eating.	71	39.4%	24	13.3%	34	18.9%	28	15.6%	23	12.8%	2.49	1.459
14. When I buy a snack I choose a soda rather than fruit.	49	27.2%	36	20.0%	36	20.0%	31	17.2%	28	15.6%	2.74	1.424
15. I put a lot of salt on the food that I eat.	65	36.1%	50	27.8%	36	20.0%	19	10.6%	10	5.6%	2.22	1.202
16. I eat the same foods every day.	89	49.4%	38	21.1%	36	20.0%	10	5.6%	7	3.9%	1.93	1.127
17. I find out about healthy eating from nurses.	50	28.6%	37	21.1%	30	17.1%	36	20.6%	22	12.6%	2.67	1.403
18. I make sure the water I drink is clean.	16	8.9%	15	8.3%	15	8.3%	24	13.3%	110	61.1%	4.09	1.352
19. I study nutrition in school.	27	15.0%	22	12.2%	42	23.3%	29	16.1%	60	33.3%	3.41	1.437
20. I ask my mother which foods are healthy.	14	7.8%	17	9.4%	33	18.3%	45	25.0%	71	39.4%	3.79	1.273
21. I eat foods that are good sources of Vitamin C.	6	3.3%	14	7.8%	41	22.8%	51	28.3%	68	37.8%	3.89	1.101
22. I wash fruit before eating it.	8	4.4%	3	1.7%	18	10.0%	12	6.7%	139	77.2%	4.51	1.044
23. I make sure that meat I eat is cooked enough.	14	7.8%	11	6.1%	14	7.8%	21	11.7%	120	66.7%	4.23	1.282
24. I talk to my friends about which healthy foods to eat.	49	27.2%	30	16.7%	51	28.3%	25	13.9%	25	13.9%	2.71	1.369
25. I eat protein at every meal.	16	8.9%	34	18.9%	72	40.0%	36	20.0%	22	12.2%	3.08	1.111
26. I try to eat food and drink beverages with calcium.	18	10.0%	27	15.0%	49	27.2%	53	29.4%	33	18.3%	3.31	1.220
27. I eat foods that are good sources of vitamin A.	14	7.8%	19	10.6%	54	30.0%	48	26.7%	45	25.0%	3.51	1.198
28. I consider whether my meals have enough protein.	29	16.1%	27	15.0%	63	35.0%	38	21.1%	23	12.8%	2.99	1.235
29. I eat breakfast every day.	22	12.2%	21	11.7%	40	22.2%	24	13.3%	73	40.6%	3.58	1.426
30. I drink soda instead of fruit juices	58	32.2%	29	16.1%	45	25.0%	18	10.0%	30	16.7%	2.63	1.446
31. I would choose to eat sweets instead of a piece of fruit.	59	32.8%	28	15.6%	45	25.0%	24	13.3%	24	13.3%	2.59	1.405
32. I think about whether what I eat is healthy.	25	13.9%	19	10.6%	43	23.9%	35	19.4%	58	32.2%	3.46	1.396
33. I drink coffee with meals.	89	49.4%	32	17.8%	27	15.0%	16	8.9%	16	8.9%	2.10	1.342
34. I choose to eat foods that are low in fats.	31	17.2%	32	17.8%	58	32.2%	31	17.2%	28	15.6%	2.96	1.292
35. I obtain information about nutrition from the internet.	33	18.3%	37	20.6%	47	26.1%	34	18.9%	29	16.1%	2.94	1.334
36. I read public announcements about nutritious foods.	45	25.0%	27	15.0%	52	28.9%	35	19.4%	21	11.7%	2.78	1.331

	F	%	F	%	F	%	F	%	F	%	Mean	SD
37. I eat a variety of foods.	23	12.8%	23	12.8%	45	25.0%	41	22.8%	48	26.7%	3.38	1.342
38. I drink eight glasses of liquid every day.	23	12.8%	23	12.8%	48	26.7%	42	23.3%	44	24.4%	3.34	1.321
39. I choose to eat chips and other snacks instead of fruits.	38	21.1%	39	21.7%	50	27.8%	28	15.6%	25	13.9%	2.79	1.319
40. I read about nutritious food to eat in magazines or newspapers.	55	30.6%	32	17.8%	43	23.9%	34	18.9%	16	8.9%	2.58	1.333
41. I help my family select food to buy.	21	11.7%	17	9.4%	50	27.8%	44	24.4%	48	26.7%	3.45	1.296
42. I ask other adults questions about healthy eating.	29	16.1%	26	14.4%	33	18.3%	57	31.7%	35	19.4%	3.24	1.355

Table 2 shows the Descriptive Statistics for each of the 42 different activities. The mean of question (22, 23, 18, 11, 21, 20, 8, 10, 6, 29, and 27) are (4.51, 4.23, 4.09, 3.92, 3.89, 3.79, 3.69, 3.66, 3.61, 3.58, and 3.51), this implies the responders most of the times do these activates because their average are close to 4.

Then, the mean of question including (41, 19, 37, 38, 26, 7, 42, 12, 25, 5, 1, 28, 34, 35, 4, 39, 36, 9, 14, 24, 17, 30, 31, and 40) are (3.45, 3.41, 3.38, 3.34, 3.31, 3.24, 3.24, 3.09, 3.08, 3.01, 2.99, 2.99, 2.96, 2.94, 2.93, 2.79, 2.78, 2.75, 2.74, 2.71, 2.67, 2.63, 2.59, and 2.58) which means the responders sometimes do these activates because their average are close to 3.

Finally, the mean of question including (13, 2, 3, 15, and 33) are (2.49, 2.28, 2.22, 2.22, 2.10, and 1.93); this means, the responders rarely do these activates because their average are close to 2.

Table 3 Descriptive Statistics for each of the different activities

	Never		One time in a weak		One time in a day		Two times in a day		More than two times in a day		Mean	SD
	F	%	F	%	F	%	F	%	F	%		
43. I eat fruits.	18	10.0%	56	31.1%	39	21.7%	38	21.1%	29	16.1%	3.02	1.255
44. I eat green vegetables.	44	24.4%	57	31.7%	49	27.2%	18	10.0%	12	6.7%	2.43	1.158
45. I eat other vegetables.	36	20.0%	57	31.7%	61	33.9%	17	9.4%	9	5.0%	2.48	1.070
46. I eat meat.	18	10.0%	39	21.7%	46	25.6%	43	23.9%	34	18.9%	3.20	1.257
47. I drink milk.	40	22.2%	34	18.9%	45	25.0%	33	18.3%	28	15.6%	2.86	1.369
48. I eat sweets.	21	11.7%	40	22.2%	44	24.4%	26	14.4%	49	27.2%	3.23	1.370
49. I eat cereal, bread, or tortillas.	26	14.4%	37	20.6%	50	27.8%	27	15.0%	40	22.2%	3.10	1.350
50. I eat high-calorie snack foods.	31	17.2%	53	29.4%	47	26.1%	25	13.9%	24	13.3%	2.77	1.269

Table 2 shows the Descriptive Statistics for each of the 42 different activities. The mean of question (48, 46, 49, 43, 47, and 50) are (3.23, 3.20, 3.10, 3.02, 2.86, and 2.77), this implies the responders sometimes do these activates because their average are close to 3.

In addition, the mean of question including (45 and 46) are (2.48 and 2.43); this means, the responders rarely do these activates because their average are close to 2.

One Sample T-Test

It compares the mean of one sample that have been taken from the population randomly with the specific value (hypothesized value).

Now we will test to see is there any difference between the average for each of the items in all 50 questions about activates separately with the hypothesized value =3

Table 4 One Sample T-Test for each of the different activities with hypothesized value (3)

	N	Mean	Std. Deviation	Mean Difference	T	p-value
1. I plan my meals so that they are healthy	180	2.994	1.253	-0.006	-0.059	0.953
2. I read about nutrition in books.	180	2.278	1.163	-0.722	-8.332	0.000
3. I choose to drink soda instead of water.	180	2.222	1.244	-0.778	-8.387	0.000
4. I study food labels to learn about nutrients in food.	180	2.933	1.306	-0.067	-0.685	0.494
5. I learn about healthy food from watching TV.	180	3.006	1.239	0.006	0.060	0.952
6. I suggest healthy foods for my family to buy.	180	3.606	1.230	0.606	6.603	0.000
7. I eat foods that I know are good for me even if I don't like them.	180	3.239	1.451	0.239	2.209	0.028
8. I try new foods.	180	3.694	1.201	0.694	7.758	0.000
9. I ask my teacher about healthy food to eat.	180	2.750	1.374	-0.250	-2.442	0.016
10. I eat foods containing iron.	180	3.656	1.169	0.656	7.523	0.000
11. I choose to eat foods that contain vitamins.	180	3.917	1.118	0.917	11.000	0.000
12. If I think I'm gaining too much weight I eat fewer sweets.	180	3.094	1.482	0.094	0.855	0.394
13. I ask my grandparents questions about healthy eating.	180	2.489	1.459	-0.511	-4.700	0.000
14. When I buy a snack I choose a soda rather than fruit.	180	2.739	1.424	-0.261	-2.461	0.015
15. I put a lot of salt on the food that I eat.	180	2.217	1.202	-0.783	-8.745	0.000
16. I eat the same foods every day.	180	1.933	1.127	-1.067	-12.702	0.000
17. I find out about healthy eating from nurses.	175	2.674	1.403	-0.326	-3.071	0.002
18. I make sure the water I drink is clean.	180	4.094	1.352	1.094	10.857	0.000
19. I study nutrition in school.	180	3.406	1.437	0.406	3.788	0.000
20. I ask my mother which foods are healthy.	180	3.789	1.273	0.789	8.316	0.000
21. I eat foods that are good sources of Vitamin C.	180	3.894	1.101	0.894	10.899	0.000
22. I wash fruit before eating it.	180	4.506	1.044	1.506	19.353	0.000
23. I make sure that meat I eat is cooked enough.	180	4.233	1.282	1.233	12.907	0.000
24. I talk to my friends about which healthy foods to eat.	180	2.706	1.369	-0.294	-2.886	0.004
25. I eat protein at every meal.	180	3.078	1.111	0.078	0.939	0.349
26. I try to eat food and drink beverages with calcium.	180	3.311	1.220	0.311	3.420	0.001
27. I eat foods that are good sources of vitamin A.	180	3.506	1.198	0.506	5.661	0.000
28. I consider whether my meals have enough protein.	180	2.994	1.235	-0.006	-0.060	0.952
29. I eat breakfast every day.	180	3.583	1.426	0.583	5.490	0.000
30. I drink soda instead of fruit juices	180	2.628	1.446	-0.372	-3.455	0.001

31. I would choose to eat sweets instead of a piece of fruit.	180	2.589	1.405	-0.411	-3.924	0.000
32. I think about whether what I eat is healthy.	180	3.456	1.396	0.456	4.379	0.000
33. I drink coffee with meals.	180	2.100	1.342	-0.900	-9.000	0.000
34. I choose to eat foods that are low in fats.	180	2.961	1.292	-0.039	-0.404	0.687
35. I obtain information about nutrition from the internet.	180	2.939	1.334	-0.061	-0.615	0.539
36. I read public announcements about nutritious foods.	180	2.778	1.331	-0.222	-2.240	0.026
37. I eat a variety of foods.	180	3.378	1.342	0.378	3.777	0.000
38. I drink eight glasses of liquid every day.	180	3.339	1.321	0.339	3.442	0.001
39. I choose to eat chips and other snacks instead of fruits.	180	2.794	1.319	-0.206	-2.091	0.038
40. I read about nutritious food to eat in magazines or newspapers.	180	2.578	1.333	-0.422	-4.251	0.000
41. I help my family select food to buy.	180	3.450	1.296	0.450	4.659	0.000
42. I ask other adults questions about healthy eating.	180	3.239	1.355	0.239	2.365	0.019
43. I eat fruits.	180	3.022	1.255	0.022	0.238	0.812
44. I eat green vegetables.	180	2.428	1.158	-0.572	-6.629	0.000
45. I eat other vegetables.	180	2.478	1.070	-0.522	-6.548	0.000
46. I eat meat.	180	3.200	1.257	0.200	2.135	0.034
47. I drink milk.	180	2.861	1.369	-0.139	-1.361	0.175
48. I eat sweets.	180	3.233	1.370	0.233	2.284	0.024
49. I eat cereal, bread, or tortillas.	180	3.100	1.350	0.100	0.994	0.322
50. I eat high-calorie snack foods.	180	2.767	1.269	-0.233	-2.467	0.015

Table 4 shows there is a statistically significant difference between the mean of each of the activities like (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, and 50) with hypothesized value (3) because their p-values are less than the significant level of alpha=0.05.

Also, there is no statistically significant difference between the mean of each of the activities like (1, 4, 5, 12, 25, 27, 34, 35, 43, 47, and 49) with hypothesized value (3) because their p-values are higher than the significant level of alpha=0.05.

Chapter four

Conclusions and

recommendations

This chapter presents conclusions and recommendations which are derived out from the study.

1. Conclusions

Based on the results, it can be concluded that:

- Most of the participants are aged 13 years (36.7%)

- The percentage of female (98.9%) is higher than the percentage of male participants (1.1%).

- Most of the mothers have elementary certificate (30.6%) since most of the fathers have graduated from secondary school (29.4%) as shown on figure 1.

- The mean of question (22, 23, 18, 11, 21, 20, 8, 10, 6, 29, and 27) are (4.51, 4.23, 4.09, 3.92, 3.89, 3.79, 3.69, 3.66, 3.61, 3.58, and 3.51), this implies the responders most of the times do these activates because their average are close to 4.

- which means the responders sometimes do these activates because their average are close to 3.

Recommendation

• Educational materials need to be age-specific, developed and piloted for particular ages of students

• Programmes may need to explain for the students the importance of diet the effect of deficiency of humun being

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Appendices

ئامادة كردني لةلايةن قوتابي

بەسەرپەرشتی

م هناء عثمان سعدي