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Assessment of Knowledge and Practices toward Salt Intake among Adolescents

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Abstract

BACKGROUND: High salt intake is linked to risk of development of renal disease, stomach cancer, and osteoporosis. Raised BP typically presents in adulthood, but its origin commonly begins in childhood.

AIM: The aim of this study is to assess of knowledge and practices toward salt intake among adolescents.

METHODS: This was a cross-sectional that carried out in Mansoura governorate. A convenience sample of 240 adolescents between 12 and 17 years was taken from community recreation places and clubs. A pre-tested questionnaires were developed to assess sociodemographic characteristics, knowledge toward salt consumption, knowledge toward salt hazards, and trials to control salt consumption. A modified food frequency questionnaire was used to assess their nutritional practices.

RESULTS: Nearly, half of the study group was aged 14–15 years (40.9%). Nearly, two-third of the study participants was female (64.2%) and three quarter was from urban areas (75%). More than half of the study group believed to consume moderate amount of salty food (57.1%), and about half of them had good knowledge about salt harms and value of reduction of salt consumption (50.8% and 53.3%, respectively). Unfortunately, majority of them did not attempt any trial of mentioned trials to control their salt intake. Only less than 50% try to minimize outdoors food and processed food consumption.

CONCLUSION: Although study participants knew the harm of salt consumption; unfortunately, majority of them did not attempt any trial of mentioned trials to control their salt intake.

RECOMMENDATIONS: These findings highlighted the importance of nutritional counseling among adolescents toward healthy eating practices.

Introduction

Salt is generally means sodium chloride (40% Na and 60% Cl) that used in cooking about 5000 years ago. The problem started when salt consumption became excessive to what is physiologically needed [1].

High salt intake is linked to risk of development of renal disease, stomach cancer, and osteoporosis. It also increases autoimmune responses in the CNS and promotes cerebral small vessel disease [2].

Raised blood pressure and cardiovascular disease usually begin in childhood. Hence, it is critical to do interventions to prevent blood pressure from rising with age [3].

"Reducing sodium intake to a mean of 2400 mg/day, relative to 3300 mg/day, lowers blood pressure by 2/1 mmHg, reducing intake to a mean of 1500 mg/day, and lowers blood pressure by 7/3 mmHg [4].

The most salt in children's diets came from grains, followed by meat and dairy products. Dairy products contributed less to dietary salt intake as people got older [5]. Children's salt consumption is high, especially among 5–6 years old and 13–17 years old [6].

Adolescence is a period of rapid growth, with unique health and developmental requirements. Adolescents' unhealthy habits include skipping meals, ordering takeout away from home, eating snacks, especially sweets and salty snacks, and eating at fast food restaurants [7]. As a result, salt reduction initiatives are recommended by the World Health Organization. Furthermore, salt intake should be tracked, and 24 h urinary sodium should be measured if possible [8].

Healthy food choices can aid in the development of appropriate food with a daily sodium intake of 1500 mg (Na density 0.4–0.5 mg/kcal) [9].

Hence, the aim of this study is to assess knowledge and practices toward salt intake among adolescents as unhealthy eating habits can lead to a variety of health problems in the future.

Subjects and Methods

Study design and settings

This was a cross-sectional that carried out in Mansoura, the capital city of Dakahlia governorate, Egypt, located on the river Nile in the northeast of the Delta. The study was conducted as a graduation project of nutrition diploma awarded from National Nutrition Institute.

Study population

A convenience sample of 240 medically free adolescents between 12 and 17 years old was recruited from community recreation places and clubs in Mansoura governorate. Participants who agreed to participate were included in the study.

Sample size

Sample size was calculated using the statistical program of the Open Epi version. The sample size was estimated with 5% acceptable margin of error and 95% confidence level calculation assuming that knowledge toward hazards of excess salt intake 85.5% according to [10]. The estimated sample size was 191, after adjustment for (20%) drop outs, the sample size was increased to 229.

Data collection tools

A self-administrated questionnaires were developed to collect the data and checked for clarity, reliability, and acceptance through pilot test. All questions were close-ended and pre-coded. Questionnaires were in the English language, then translated into Arabic. The studied participants were informed about the aim of the study and was encouraged to participate.

First questionnaire included:

- Sociodemographic characteristics including (age, gender, residence, parents' education, and occupation).
- Questions regarding knowledge and practices toward salt consumption.
  - It included 13 questions according to the WHO STEP-wise approach to chronic disease risk factor surveillance-dietary salt module [11].
  - Section 1: Knowledge toward salt consumption including how much salt is consumed, how much salt can cause health problems, and the importance of reducing salt in the diet.
  - Section 2: Practices of the study participants toward salt consumption including how often they add salt to food before or during eating, how often salt is used in cooking or preparing foods in the home, and how often they eat high-salt processed foods.
- Section 3: Trials to reduce salt consumption including (avoid/minimize processed foods consumption, look at the salt or sodium labels on food, eat meals without adding salt at the table, buy low salt/sodium alternatives, cook meals without adding salt, and use spices other than salt when cooking and avoid eating out).
- Sources of nutritional knowledge including (doctors, relatives, mass media, and friends).

Second questionnaire included a modified food frequency questionnaire to assess the nutritional practices of adolescents. Food frequency questionnaire showed consumption of food groups and demonstrated how frequently (never/rarely, 1–2 times/month, once/week, 2–3-more/week, daily), which was consumed, including, energy producing food, high biological value protein, protective food, and beverages.

Data management and analysis

All collected questionnaires were revised for completeness and consistency. Pre-coded data were entered on the Statistical Package of the Social Science Software program, version 21(SPSS) to be statistically analyzed. Data were summarized using numbers and percent for qualitative variable. Descriptive analysis was used to demonstrate sociodemographic variables, as well as frequency of different dietary practices.

Ethical consideration

Declaration of the aim of the study was done. Participants who agreed to participate were included. Data confidentially were preserved according to the revised Helsinki Decelerations of biomedical ethics [12].

Results

The study group included 240 students, most of the study group aged 14–15 years old (40.9%). Nearly two-third of the study participants was females (64.2%) and three quarter was from urban areas (75%).

Nearly two-third of the study group has high parental educational levels; both for their mothers and fathers (62.5 and 69.2%, respectively). Nearly half of them has non-worker mothers (58.8%) and highly specialized worker fathers (47.5%) (Table 1).

More than half of the study group believed to consume just right amount of salty food (57.1%), and about half of them had good knowledge about salt harms and value of reduced salts consumptions (50.8% and 53.3%, respectively) (Table 2).

Table 1: Sociodemographic characteristics of the studied participants

Gender				
	Male		Female	
	No	%	No	%
	86	36.8	154	64.2
Age group				
	Age group	No	%	
	12–13 years	89	37	
	14–15 years	98	40.9	
	16–17 years	53	22.1	
Parent's education				
	Father		Mother	
	No	%	No	%
Illiterate	5	(2.1)	9	(3.8)
Read and write	20	(8.3)	25	(10.4)
Primary	4	(1.7)	1	(0.4)
Preparatory	4	(1.7)	10	(4.2)
Secondary	41	(17.1)	45	(18.8)
University	166	(69.2)	150	(62.5)
Parent's occupation				
	Father		Mother	
	No	%	No	%
No work	1	(0.4)	141	(58.8)
Worker	25	(10.4)	5	(2.1)
Farmer	27	(11.3)	2	(0.8)
Employee	73	(30.4)	34	(14.2)
Specialist	114	(47.5)	58	(24.2)

Only 20% of had their nutritional knowledge from doctors and the main bulk received their nutritional knowledge from other sources as relatives and mass media and friends (Table 3).

Table 2: Knowledge of the study participants toward salt consumption

	No	%
How much salt do you think you consume?		
Far too much	20	8.3
Too much	64	26.7
Just right amount	137	57.1
Too little	19	7.9
Do you think that too much salt in your diet could cause a serious health problem?		
Yes	122	50.8
No	45	18.8
Don't know	73	30.4
How important to you is lowering the salt in your diet?		
Important	128	53.3
Not important	112	46.7

Most of our study group consume add on salts both to food (78.7%) and in cooking and food preparation (86.7%). Furthermore, they consumed high salt containing processed foods (60.5%) (Table 4).

Table 3: Sources of nutritional knowledge among the studied participants

Sources of nutritional knowledge	No	%
Doctor	53	22.1
Relatives	82	34.2
Mass media	77	32.1
Friends	28	11.7

Although about 50% of the study participants knew the harm of salt consumption; unfortunately, majority of them did not attempt any trial of mentioned trials to control their salt intake. Only less than 50% try to minimize outdoors food and processed food consumption (Table 5).

Majority of study participants frequently consumed bread, rice/paste (89.1%, 82.1% respectively). Nearly one-third of the study participants frequently consumed cheese (33.8%). minority frequently consumed processed meat (11.7%). Nearly one-third of the study participants frequently consumed

Table 4: Practices of the study participants toward salt consumption

Frequency	No	%
How often do you add salt to your food before you eat it or as you are eating it?		
Always	46	19.2
Usually	86	35.8
Sometimes	57	23.8
Rarely	45	18.8
Never	6	2.5
How often is salt added in cooking or preparing foods in your household?		
Always	85	35.4
Usually	87	36.3
Sometimes	36	15.0
Rarely	21	8.8
Never	11	4.6
How often do you eat processed food high in salt		
Always	13	5.4
Usually	27	11.3
Sometimes	105	43.8
Rarely	80	33.3
Never	15	6.3

protective fresh vegetables and fruits (27.5%, 34.9%) (Table 6).

Table 5: Trials of the study participants regarding control salt intake

	Not tried; N (%)		Tried; N (%)	
	No	%	No	%
Do you do any of the following on regular base to control salt intake				
Avoid/minimize processed foods consumption	113	(47.1)	127	(52.9)
Look at the salt or sodium labels on food	187	(77.9)	53	(22.1)
Eat meals without adding salt at the table	200	(83.3)	40	(16.7)
Buy low salt/sodium alternatives	164	(68.3)	76	(31.7)
Cook meals without adding salt	225	(93.8)	15	(6.3)
Use spices other than salt when cooking	162	(67.5)	78	(32.5)
Avoid eating out	114	(47.5)	126	(52.5)
Other	196	(81.7)	44	(18.3)

Discussion

Adolescence is a period of life of great physical and emotional changes with specific health and developmental needs. This study could help us better understand the degree of knowledge and behavior of adolescents toward salt consumption which considered major nutritional issue.

Table 6: Frequent distribution of different food groups

	Rarely	1–2/month	1/week	2–3/week	Daily
	N (%)	N (%)	N (%)	N (%)	N (%)
Cereal and cereal products					
Bread	2 (0.8)	9 (3.8)	15 (6.3)	31 (12.9)	183 (76.2)
Rice or pasta	3 (1.3)	8 (3.3)	32 (13.3)	83 (34.6)	114 (47.5)
Meat products					
Fat-free meat	24 (10)	11 (4.6)	138 (57.5)	41 (17.1)	26 (10.8)
Fatty meat	74 (30.8)	31 (12.9)	49 (20.4)	68 (28.3)	18 (7.5)
Processed meat	125 (52.1)	45 (18.8)	42 (17.5)	21 (8.8)	7 (2.9)
Chicken with skin	108 (45)	35 (14.6)	65 (27.1)	28 (11.7)	4 (1.7)
Skin free chicken	94 (39.2)	45 (18.8)	57 (23.8)	37 (15.4)	7 (2.9)
Grilled fish	36 (15)	30 (12.5)	77 (32.1)	70 (29.2)	27 (11.3)
Fried fish	60 (25)	42 (17.5)	68 (28.3)	61 (25.4)	9 (3.8)
Milk and milk products					
Skimmed milk	46 (19.2)	34 (14.2)	63 (26.3)	35 (14.6)	62 (25.8)
Full cream milk	43 (17.9)	25 (10.4)	82 (34.2)	44 (18.3)	46 (19.2)
White Cheese	68 (28.3)	22 (9.2)	69 (28.8)	46 (19.2)	35 (14.6)
Protective food					
Vegetables	104 (43.3)	34 (14.2)	36 (15)	31 (12.9)	35 (14.6)
Fruits	74 (30.8)	28 (11.7)	55 (22.9)	31 (12.9)	52 (21.7)

Most of our adolescent study group aged 14–15 years old (40.9%). More than two-thirds had high parental educational levels; both for their mothers and fathers (62.5 and 69.2% respectively). Nearly half of them highly specialized worker fathers (47.5%).

In this study, although more than half of our study group had good knowledge regarding consuming moderate amount of salty food (57.1%), and about half of them had good knowledge about salt harms and value of reduced salts consumptions (50.8% and 53.3% respectively); unfortunately, majority of them did not attempt any trial of mentioned trials to control their salt intake. Majority did not try to cook without salt, eat without add salt on table (93.8%, 83.3%). Furthermore, more than three quarter did not try to look for salt label on food (77.9%). More than two-thirds did not try to purchase low-salt substitutes or use spices other than salt (68.3%, 67.5%).

This is in line with study [10], which revealed that nearly three quarters of participants 73.8 percent of people said that they added salt to their food at the table frequently or always. Almost everyone (85.8%) was aware that excessive salt consumption causes serious health problems. However, only 44.2% thought that it would be beneficial to reduce salt consumption, 35.6% thought that it was excessive, and 34.3% did not try to reduce salt

This is consistent with [13] study findings which suggested that knowledge alone is insufficient to change behavior.

This study revealed that majority of the study participants frequently consumed bread (89.1%). 60.5% frequently consumed processed food high in salt.

This is consistent with the study [14] that found that processed food was the major source of salt intake including industrial breads; also, majority of adolescents (80%) in middle- and low-income countries widely consumed salty snacks [15].

More than half the studied participants frequently add on salt on food (54.8%). This is in line with studies [16], [17] that demonstrated that added salt was the main source of salt intake, which was higher than the WHO-recommended level.

Majority of the study participant frequently consumed rice/paste (82.1%). Nearly one-third of the study participants frequently consumed fatty meat and cheese (35.8%), (33.8%). This is consistent with study in some European countries, the main sources of salt intake were cereals, meat, and dairy products [18].

Unfortunately, only one-third of the study participants frequently consumed protective fresh vegetables and fruits (27.5%, 34.9%). This may suggest that study participants not follow WHO recommendations for healthy diet for Eastern Mediterranean region [19].

This adolescent performance was consistent with other recent surveys [20], [21] which found that the level of compliance to the Mediterranean diet (MD) was strongly associated with knowledge and behavior regarding salt intake suggesting that eating habits and health are linked.

This also proves that MD adherence can coexist with a relatively low salt intake [14]. In general, the study participants' practices were less satisfactory in comparison to their level of knowledge. These negative practices were particularly prevalent among adolescents, which is line with the observations of other studies, which showed that this age group failed to meet many nutritional guidelines. As a result, educational campaigns are critical for implementing healthy nutritional practices for them [22].

Conclusion

Although nearly half of the study participants knew the harm of salt consumption; unfortunately, majority of them did not attempt any trial of mentioned trials to control their salt intake. Only less than 50% try to minimize outdoors food and processed food consumption.

Recommendations

These findings highlighted the importance of nutritional counseling among adolescents toward healthy eating practices.

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