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**NUTRITIONAL STATUS AND FEEDING PROBLEMS  
OF PHYSICALLY HANDICAPPED**

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The study was designed to assess nutritional status of physically handicapped children (4 - 10 years) of both sexes according to weight for age, height for age and weight for height Classifications. Malnutrition was common among females as compared to males. Weight for age system and weight for height successfully identified children who were undernourished ( $< - 2SDs$ ) or overnourished ( $> + 2SDs$ ). Obesity among children 7 - 10 yrs. represented 44.44% for females and 42.86% for males. However, most of females 4 - 6 yrs. were malnourished (had short height and low weight). Dietary intakes of males was found to be better than that of females. Mean energy intakes for both males and females under study was below the recommended value. In addition most of children had low dietary intake of vitamin A. Most of children of both sexes preferred semisoft food and food cut into small pieces.

**INTRODUCTION**

Classification of handicaps usually consider only the major handicap, and thus labelling a child as having a particular disability gives little information on the food and nutrition

problems which may be present (Janes, 1978 and webb 1980). Therefore, identification of possible nutrition problems is considered to be a high priority problem.

Poor nutrition can affect a child's mental and physical growth. In handicapped children, growth may be affected not only by nutrition status but also by the underlying handicap and genetic potential (Alakija, 1988, Dietz and Bandini, 1989). In children without chronic handicaps, acute under-nutrition is characterized by a decrease in weight for age. As under nutrition becomes more chronic a low weight for age, a low height for age, but a normal weight for height may be present (Dietz and Bandini, 1989 and Suzuki et al., 1991). The purpose of this study was to evaluate nutritional status of selected physically handicapped children in Jeddah area of Saudi Arabia and to identify main nutritional problems among them.

#### METHODS

##### Subjects :

The study included 35 children who were physically handicapped (20 males and 15 females), their age ranged from 4-10 years old. The study was carried out in several centers for handicapped in Jeddah area, Saudi Arabia. The subjects and their parents were informed about the purpose and contents of the study.

##### Procedure :

- Anthropometric measurements :

Heights (cm) and weights (kg) of all subjects were measured in the centers. The child who could not stand on the beam balance without support had his weight calculated by subtracting the nurse weight from the total weight of the nurse plus the child. Also, height was measured in three parts for those who could not stand (sitting height, buttock to knee, and knee to foot). Weight for height ratio was also calculated for each child (Wt / Ht).

Nutritional status of the subject was categorized as over-nourished or malnourished based on standard deviation scores of weight for age, weight for height and height for age. The cut off point of ( $> + 2SD$ ) was used to indicate prevalence of relative overweight, while cut off point of ( $< - 2SD$ ) was used to indicate prevalence of underweight. The cut off point of ( $< - 2SD$ ) weight for height and weight for age corresponds approximately to 80% of the standards, while it corresponds to approximately 90% of standard height for age. Also,  $+ 1.0 SD$  corresponds approximately to 110% and  $+ 2.0 SD$  corresponds approximately to 120% of standards weight for age and weight for height. Degrees of malnutrition were classified as mild (80% of standard), moderate (70% of standard) and severe (60% of standard) as Jelliffe's classification (Jelliffe, 1967). Height for age of  $>90%$  of the standard is considered normal and  $<90%$  of the standard is considered stunted [moderately stunted (90 - 81%) and severely stunted ( $< 80%$ )].

- Dietary adequacy assessment :

Information about food intake was collected on 3 consecutive days. The intake of energy and nutrients was calculated using food composition table (Pellet and Shadarivan,

1970). The means of nutrients intake were compared to the recommended daily dietary allowances (Food and nutrition board, 1989) to determine dietary adequacy. The dietary assessment considers not only what child eats but also how well the child eats.

- Eating impairment and behaviour :

Questionnaires were designed to obtain information such as difficulties with chewing and swallowing, levels of appetite disorder, assistance needed for eating, food preferences (food texture), eating position and any feeding problems. Also, there are some questions concerning parent's education, family income, family size and causes of physical handicap and other factors that may have an effect on child nutritional status. The questionnaires were answered by child's parent or by caretakers.

- Statistical analysis :

Statistical analysis were done using a personal computer with a statistical package program (EPI). The correlation coefficient and significance of differences among mean or percentage values were obtained.

### RESULTS

Children under study had four different types of physical handicap (Quadriplegia, paraplegia, muscles weakness and nerves weakness) as stated in table (1). Most of males 4-6 years (66.66%) suffer from nerves weakness, while 28.57%, 21.42%, 28.57 and 21.42% of males 7 - 10 years had quadriplegia, paraplegia, muscles weakness and nerves weakness, respectively. Most of females 4 - 6 years

(66.66%) suffer from nerves weakness, while 33.33% of females 7- 10 years suffer from muscles weakness and 44.44% of them suffer from nerves weakness.

The same table shows that 50% of males and 46.67% of females (4 - 10 yrs) had their physical handicapped since birth. Other causes of this type of handicapped included accident and diseases.

Results of anthropometric measurements represented as means and as percentage of standards are shown in table (2). Heights and weights of physical handicapped were compared with the standards for age.

Nutritional status of physically handicapped children based on classification of weight for age and weight for height is presented in table (3). According to weight for age classification, 50% and 21.42% of males 4 - 6 yrs and 7 - 10 yrs, respectively; their weights for age were considered to be normal. Percentage of males (4 - 6 yrs) who were found to be mild or moderately malnourished was 16.60%, none of the males of this age group suffered from severe malnutrition. Also, The results show that 16.60% of males (4 - 6 yrs) were considered obese. On the other hand, 14.28% of males (7 - 10 yrs) suffered from severe malnutrition and similar percentage had moderate malnutrition. Higher percentage of obesity (42.86%) was found among males (7 - 10 yrs) compared to the other age group. Nutritional status of females 4- 6 yrs was found to be as follows : 33.20% , 33.20%, and 16.60% were slightly, moderately and severely malnourished respectively , while 16.60% were obese. Degrees of malnutrition among females 7 - 10 yrs were mild (11.11%), moderate (11.11%) and severe

22.22%). Also, there were 44.44% of obese females (7 - 10 yrs) .

Prevalence of overweight and underweight among females of both age groups according to weight for height did not differ from the results obtained by weight for age . None of the females of both groups had normal weight for height . However, 16.67% and 7.14% of males 4 - 6 yrs and 7 - 10 yrs respectively had normal weight for height. According to weight for height classification 50% and 42.85% of males (4 - 6 yrs and 7 - 10 yrs) respectively, were considered malnourished.

Table (4) shows nutritional status of handicapped children according to height for age classification. There were 33.33% and 16.60% of males 4 - 6 yrs, who had moderate (90% - 81% of standard height for age) and severe stunting (<80% of standard), respectively. While 4.14% and 14.28% of males 7 -10 yrs had moderate and severe stunting, respectively. Among females 4 - 6 yrs there were 16.66% and 33.33% who had moderate and severe stunting, respectively, while 11.11% and 22.22% of females 7 - 10 yrs had moderate and severe stunting, respectively.

Figures (1 & 2 ) show comparison between males and females (4- 6 yrs and 7 - 10 yrs) with regard to prevalence of normal (N) and malnutrition (M) based on (weight for age and height for age classifications). Height for age parameter showed that the incidence of malnutrition among males and females 4 - 6 yrs represented 50%, while it represents 33.3% of females and 24% of males 7 - 10 yrs.

Mean daily energy and nutrients intakes by physically

handicapped children (male/ female) 4 - 6 yrs and percentage of RDA are presented in table (5). Mean energy intake by females was considered below recommended RDA (54.51% of RDA). However, mean intake of males represented 94.38% of RDA. Mean intakes of carbohydrate and fat by females represented 49.71% and 54.91% of RDA. The recommended intake of fat and carbohydrate calculated as 30% and 55% of recommended energy. Lower fiber intakes were found among males and females 4 - 6 yrs compared to the intakes of both sexes of the other age group (7 - 10 yrs).

Mean calcium intakes by both sexes were found to be within the acceptable value (more than 2/3 of RDA). Phosphorus intake by males represented 132.81% of RDA, while it represented 54.23% of RDA for females. Also, dietary iron intake by females was found to be 46% of the recommended value. Mean vitamin A intakes by both sexes were below the RDA. However, the values were considered within the acceptable value for males (84.9% of RDA) and below 2/3 of RDA for females (56.69% of RDA). Mean niacin intakes by females represented 59.08% of RDA. On the other hand, the intakes of protein, phosphorus, thiamin, riboflavin, niacin, vitamin C, sodium and potassium by males exceeded the RDA. While the intake of protein, riboflavin, vitamin C and potassium by females exceeded the RDA.

Table (6) represents mean daily energy and nutrients intakes by children 7 -10 yrs and percentage of RDA. Both males and females had lower mean energy intake. Mean energy intake for males and females represented 65.48% and

69.45% of RDA, respectively. Males had lower intakes of fat (62.46% of RDA) compared to that of females (87.87% of RDA). Mean calcium intakes by males represented lower percentage of RDA (78.69%) compared to females (95.01% of RDA). On the other hand, mean intakes of vitamin A by both sexes were considered to be below 2/3 of RDA (51.56% and 48.23 of RDA for male and female, respectively). Mean intakes of the remaining nutrients were found to be either within or exceeded the RDA.

Correlation coefficients between each of father's education, income, family size, anthropometric measurements and energy and nutrients intake~(Protein, iron and vitamin A) are shown in table (7). Positive correlation was found between father's education and vitamin A intakes ( $r = 0.32$ ). Also, height and weight correlated positively with energy intake ( $r = 0.45$ ). Moreover, height correlated with total protein ( $r = 0.56$ ), animal protein ( $r = 0.51$ ) and iron from animal sources ( $r = 0.28$ ). Whereas body weight correlated positively with total protein ( $r = 0.52$ ), animal protein ( $r = 0.52$ ) and vitamin A ( $r = 0.36$ ).

Questionnaire results showed that most of children under study usually ate 3 - 4 meals / day. All males and females (100%) 4 - 6 yrs and most males and females 7 - 10 yrs (92% and 88.8% respectively) were able to use spoon during feeding, while 16.6% and 33.30% of males and females 4 - 6 yrs, respectively can use bottle for feeding. About 35.07% of males 7 - 10 yrs used special utensil for handi-capped. Most of males 4- 6 yrs (66.60-%) and 7 - 10 yrs (50%) preferred to eat food that is cut into small pieces. Most females 4 - 6 yrs (66.60%) ate semisoft food, while



11.10%, 22.20%, 33.30% and 33.30% of females 7 - 10 yrs preferred soft food, semisoft, food cut into small pieces and food cut in normal pieces, respectively. Percentages of children who needed assistance during feeding were 83.30% and 66.40% of males and females (4 - 6 yrs), 57.14% and 88.80% of males and females (7 - 10 yrs). About 16.60% and 14.30% of male 4- 6 yrs and 7 - 10 yrs respectively required more than 1 hr. to finish their meal as shown in table (8).

The results show that 50% and 28.57% of males 4 -6 yrs and 7 - 10 yrs, respectively had poor appetite. However, 100% of females 4-6 yrs and 44.40% of females 7 - 10 yrs had poor appetite.

#### DISCUSSION

In this study most of handicapped children had lower intakes of energy. However, a great decrease in energy intake was seen among females 4 - 6 yrs who were stunted and underweight. According to Dietz and Bandini (1989) alteration in energy intake is considered to be the most important nutritional problem among handicapped children. Mild or moderate reductions in weight for height of handicapped children are associated with altered immune function and an increased prevalence of infection.

Fiber intake by children 4 - 6 yrs was greatly lower than that of children 7 - 10 yrs. Lower fiber intake by handicapped children was also indicated by other investigators (Dietz and Bandini, 1989). Patients with severe handicaps often be fed blenderized or formula based diets that are low in fiber. Therefore, constipation may result. Efforts should

be made to provide quantity of liquid, fruit and fiber in the diet. Males of the present study had better nutrients intake compared to females. All of the handicapped children of the present study showed lower intakes of vitamin A. In handicapped children without other complicating factors, vitamin and trace element requirements are comparable to those of non-handicapped children (Dietz and Bandini, 1989).

Nutritional status of handicapped children according to the three methods of classifications indicated that malnutrition was prevalent among females compared to males. Both weight for age and weight for height systems were used successfully to identify cases of undernutrition or overnutrition in similar studies (Dietz and Bandini, 1989 and Suzuki et al. 1991). In the present study percent of obesity was higher among males and females 7 - 10 yrs as compared to the other age group. Overnutrition as well as undernutrition may also have adverse effects. Obesity in a physical handicapped child may impair mobility and motor development (Dietz and Bandini, 1989). Significant correlation was found between father's education and child's intake of vitamin A ( $P < 0.05$ ). Also, child's weight correlated significantly with energy ( $P < 0.005$ ), total protein ( $P < 0.001$ ) animal protein ( $P < 0.005$ ) and vitamin A ( $P < 0.001$ ). While heights correlated significantly with energy ( $P < 0.005$ ), total protein ( $P < 0.001$ ), animal protein ( $P < 0.001$ ) and iron from animal source ( $P < 0.05$ ).

Most of children under study needed assistance during feeding. Some children took more than 1 hr to finish eating their meals. This observations indicate the presence of some

Table(1). Distribution of handicapped children (4-10 Years) according to the type and causes of physical handicapped.

	Male(20)				Female(15)			
	4-6 Year		7-10 Year		4-6 Year		7-10 Year	
	No.	%	No.	%	No.	%	No.	%
Type physical handicapped								
- Quadriplegia	-	-	4	20.57	-	-	-	-
- Paraplegia	1	16.66	3	21.42	1	16.66	2	22.22
- Muscles weakness	1	16.66	4	20.57	1	16.66	4	44.44
- Nerves weakness	4	66.66	3	21.42	4	66.66	3	33.33
Causes								
- Since birth	4	66.66	6	42.85	5	83.33	2	22.22
- Accident	1	16.66	5	35.71	-	-	4	44.44
- Disease	1	16.66	3	21.42	1	16.66	3	33.33

Table(2). Anthropometric measurements for handicapped children ( male/female ).

Measurement	Male		Female	
	4-6 Year Mean $\pm$ SE	7-10 Year Mean $\pm$ SE	4-6 Year Mean $\pm$ SE	7-10 Year Mean $\pm$ SE
Weight (kg)	19.53 $\pm$ 1.39	33.00 $\pm$ 1.44	14.92 $\pm$ 1.29	29.78 $\pm$ 1.55
Height (cm)	103.17 $\pm$ 3.32	128.79 $\pm$ 1.41	93.83 $\pm$ 1.62	129.78 $\pm$ 2.18
BMI(kg/ht <sup>2</sup> )	18.48 $\pm$ 0.99	18.33 $\pm$ 0.47	16.38 $\pm$ 0.95	16.76 $\pm$ 0.56

feeding problems. Also poor appetite was found among most of females and males. Malnutrition caused by eating difficulties in physical handicapped children may be responsible for their delayed growth (Suzuki et al.1991). The most common feeding problems that were found among physical-ly handicapped children include incoordination of swallowing, chewing, or the presence of abnormal reflexes such as tongue thrust. The presence of one or more of this difficulties may be indicated by a preference for solids rather than liquids or a preference for soft, highly blenderized foods rather than foods with texture. Special techniques should be used for developing self feeding. Handicapped children should be encouraged to use special equipment for overcoming feeding problems.

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Table(3). Main daily energy and nutrients intakes by physically handicapped children (4-6 Years old) compared with Recommended Dietary Allowances(RDA).

Nutrients	Male			Female		
	Mean	SE	% RDA	Mean	SE	% RDA
Kilocalories	1604.57	38.23	89.41	926.61	73.08	51.47
Protein(gm):						
-Animal	39.36	3.67		24.34	2.90	
-Total	54.26	3.71	248.2	24.63	3.36	144.20
Fat(gm):						
-Unsaturated	15.27	1.88		9.71	1.05	
-Saturated	35.09	3.41		23.24	2.93	
-Total	84.08	14.90	140.1	32.95	3.65	54.91
Carbohydrate(gm)	232.89	11.01	81.04	134.22	6.68	46.12
Fiber(gm)	3.77	0.29		1.83	0.26	
Calcium(mg)	685.51	30.77	85.76	638.03	101.07	79.75
Phosphorus(mg)	1061.00	45.42	132.81	433.85	37.89	54.23
Iron(mg):						
-Nonheme	7.06	0.56		2.63	0.20	
-Heme	2.32	0.13		1.98	0.18	
-Total	9.88	0.54	99.06	4.60	0.27	140.73
Vitamin A( $\mu$ g R.E)	424.75	48.01	84.94	283.48	120.13	56.69
Thiamin(mg)	1.66	0.29	170.64	0.71	0.05	85.40
Riboflavin(mg)	1.47	0.08	134.04	1.08	0.11	201.90
Niacin(mg)	13.18	1.58	109.90	7.09	0.61	140.59
Vitamin C(mg)	91.69	4.50	213.46	56.44	6.30	395.33
Sodium(mg)	455.50	50.47	175.80	308.63	31.96	102.87
Potassium(mg)	1017.28	98.32	102.24	962.65	61.74	68.76

Table(4). Main daily energy and nutrients intakes by physically handicapped children (7-10 Years old) compared with Recommended Dietary Allowances(RDA).

Nutrients	Male			Female		
	Mean $\pm$ SE	% RDA		Mean $\pm$ SE	% RDA	
Kilocalories	1571.46 $\pm$ 44.70	75.01		1666.80 $\pm$ 58.56	83.65	
Protein(gm):						
-Animal	36.24 $\pm$ 1.67			43.39 $\pm$ 2.38		
-Total	56.13 $\pm$ 1.98	235.62		65.57 $\pm$ 3.33	234.07	
Fat(gm):						
-Unsaturated	12.29 $\pm$ 0.76			30.63 $\pm$ 1.73		
-Saturated	36.97 $\pm$ 1.05			41.79 $\pm$ 2.31		
-Total	51.53 $\pm$ 1.55	77.28		72.49 $\pm$ 3.67	102.88	
Carbohydrate(gm)	255.08 $\pm$ 9.82	79.35		230.15 $\pm$ 10.29	71.89	
Fiber(gm)	4.69 $\pm$ 0.36			5.03 $\pm$ 0.55		
Calcium(mg)	629.37 $\pm$ 22.06	78.69		758.89 $\pm$ 57.31	95.01	
Phosphorus(mg)	944.96 $\pm$ 25.14	117.74		808.49 $\pm$ 48.44	124.99	
Iron(mg):						
-Nonheme	5.59 $\pm$ 0.20			6.02 $\pm$ 0.42		
-Heme	3.81 $\pm$ 0.12			8.42 $\pm$ 1.29		
-Total	9.39 $\pm$ 0.73	94.32		14.42 $\pm$ 1.47	144.64	
Vitamin A( $\mu$ g R.E)	360.96 $\pm$ 22.14	51.56		340.42 $\pm$ 24.56	48.23	
Thiamin(mg)	0.86 $\pm$ 0.03	85.27		2.61 $\pm$ 0.59	99.71	
Riboflavin(mg)	1.25 $\pm$ 0.03	102.02		1.53 $\pm$ 0.12	132.67	
Niacin(mg)	18.85 $\pm$ 1.00	103.06		15.36 $\pm$ 0.75	122.07	
Vitamin C(mg)	101.19 $\pm$ 4.34	227.41		49.23 $\pm$ 3.79	121.52	
Sodium(mg)	743.60 $\pm$ 39.49	101.96		664.47 $\pm$ 45.95	174.66	
Potassium(mg)	787.54 $\pm$ 40.01	60.71		1138.46 $\pm$ 70.58	79.90	

Table(6). Correlation coefficients for father's education, income, family size, anthropometric measurements (height, weight and BMI) and nutrients intake.

Nutrients	Father's Education	Family Income	Family Size	Anthropometric measurements		
				Height	Weight	BMI
Energy(Kcal/day)	-0.07	0.03	0.14	0.45 □	0.45 □	0.25
Protein(gm/day):-						
-Total	-0.024	-0.04	0.07	0.56 □□	0.52 □□	0.29 *
-Animal	-0.06	-0.07	0.01	0.51 □□	0.52 □□	0.33 *
Calcium(mg)	0.087	-0.02	-0.04	0.22	0.15	-0.02
Iron(mg):-						
-Total	-0.144	-0.07	0.08	0.28 *	0.12	-0.07
- Animal	-0.074	-0.15	0.08	0.28 *	0.12	-0.07
Vitamin A( $\mu$ g R.E)	0.32 *	0.23	-0.08	0.10	0.36 **	0.34 *

\* P < 0.05      □ P < 0.005

\*\* P < 0.01      □□ P < 0.001

Table(6). Nutritional status of physically handicapped children based on classification of weight for age and body mass index (BMI).

Classification System	Obese	Overweight	Normal	Malnourished		
				Slight	Moderate	Severe
*Weight for age						
Male:-						
4-6 year	1(16.60)	-(-)	3(50.00)	1(16.60)	1(16.60)	-(-)
7-10 year	6(42.86)	1(7.14)	3(21.42)	-(-)	2(14.28)	2(14.28)
Female:-						
4-6 year	1(16.60)	-(-)	-(-)	2(33.20)	2(33.30)	1(16.60)
7-10 year	4(44.44)	1(11.11)	-(-)	1(11.11)	1(11.11)	2(22.22)
*Body mass index						
Male:-						
4-6 year	-(-)	1(16.60)	1(16.60)	2(33.33)	-(-)	2(33.30)
7-10 year	1(7.14)	1(7.14)	4(28.57)	-(-)	2(14.28)	6(42.85)
Female:-						
4-6 year	-(-)	1(16.60)	-(-)	-(-)	2(33.30)	3(50.00)
7-10 year	-(-)	2(22.22)	-(-)	2(22.22)	1(11.11)	4(44.40)



Table(7). Nutritional status of physically handicapped children based on classification system of height for age.

Classification System	Normal		Moderately short		Severely short	
	No.	%	No.	%	No.	%
Height for age Male:-						
	4-6 year	3	50.00	2	33.33	1
7-10 year	11	79.57	1	4.14	2	14.28
Female:-						
	4-6 year	3	50.00	1	16.66	2
7-10 yea	6	66.60	1	11.11	2	22.22

Table (6): Distribution of children's responses ( or their parents )  
to the questions concerning eating impairment and behavior

	Male		Female	
	4-6 Year	7-10 Year	4-6 Year	7-10 Year
Number of meal eaten/ds.	%	%	%	%
Two	-	7.14	35.30	-
Three	83.20	84.29	16.40	58.90
Four	16.60	21.40	80.00	-
More than 4	-	7.14	-	11.11
Utensil used for feeding				
Cup	66.60	64.30	16.40	66.60
Spoon	100.00	92.90	100.00	88.80
Fork	-	-	-	22.20
Bottle	16.60	-	33.30	-
By his fingers	16.60	-	-	22.20
Special utensil	-	35.70	-	-
Food texture prepared				
Liquid	-	14.30	-	-
Soft	16.60	14.30	33.30	11.10
Semi-soft	16.60	7.14	66.60	22.20
Cut into small pieces	66.60	50.00	-	33.30
Cut into normal pieces	-	14.30	-	33.30
Feeding position				
Sitting on wheelchair	-	14.30	16.60	11.10
Sitting on bed	16.16	28.57	16.60	-
With assistance	83.30	57.14	66.40	88.80
Time required to finish meal				
Less than 1/2 hr.	16.60	14.30	-	44.40
1/2 hr.	66.40	50.00	100.00	22.20
1 hr.	-	21.40	-	33.30
> than 1 hr.	16.60	14.30	-	-
Appetite				
High	-	-	-	11.10
Normal	50.00	71.40	-	44.40
Poor	50.00	28.57	100.00	44.40

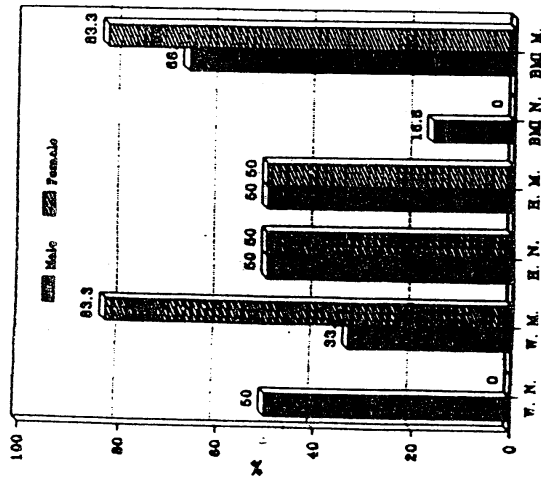


Fig. (1). Nutritional status of handicapped children (male /female) 4-9 years old according to different classification system (Height, Weight and BMI).

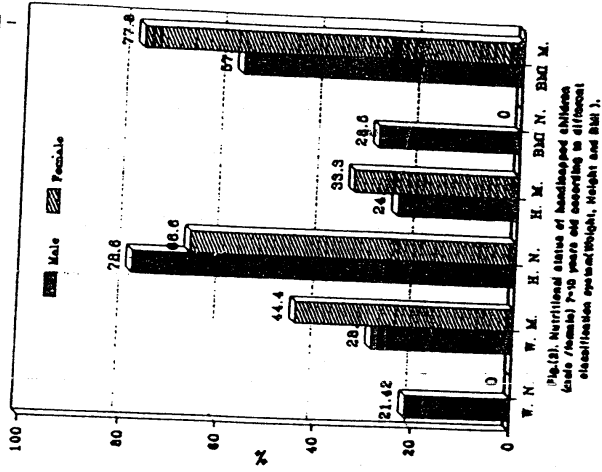


Fig. (2). Nutritional status of handicapped children (male /female) 7-10 years old according to different classification system (Height, Weight and BMI).

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الحالة الغذائية ومشاكل التغذية بين الاطفال  
المعوقين جسديا

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قسم التغذية وعلوم الاطعمة - كلية الاقتصاد المنزلى - جامعة حلوان

ضمت هذه الدراسة لتقييم الحالة الغذائية للاطفال المعوقين جسديا الذين تتراوح اعمارهم ما بين ٤ - ١٠ سنوات ( ذكور / اناث). ، بينما على تقييم الاوزان والاطوال ونسبة الوزن/الطول اتضح ان حالات سوء التغذية كانت أكبر بين الاناث مقارنة بالذكور، ويعتبر كل من وزن الجسم بالنسبة للطول ووزن الجسم بالنسبة للعمر افضل الطرق المستخدمة للتعرف على حالات النقص أو الزيادة فى التغذية بين هؤلاء المعوقين. نسبة البدانة بين الاطفال الذكور والاناث فئة العمر من ٧ - ١٠ بلغت ٤٢,٨٦٪ و ٤٤,٤٤٪ على التوالي، بينما يعانى معظم الاطفال فئة العمر من ٤ - ٦ سنوات من سوء التغذية.

كذلك اوضحت الدراسة ان معدل المأخوذ من العناصر الغذائية لدى الذكور يعد أفضل مما وجد بين الاناث. كما وجد بوجه عام متوسط المأخوذ من الطاقة لدى الاطفال ( ذكور واناث) فئة العمر ٤ - ٦، ٧ - ١٠ سنوات يعد اقل من قيم التوصيات الدولية. بالإضافة الى ذلك معظم الاطفال يعانون من نقص فى معدل المأخوذ من فيتامين أ. هناك بعض المشاكل التى يعانى منها الاطفال مثل مشاكل فى المضغ أو البلع ولذا- وجد أن الغالبية العظمى منهم يفضلون تناول الطعام المهروس أو شبه المهروس أو الطعام المقطع الى قطعاً صغيرة.