

The rate of failure to thrive among children aged 2 months - 5 years in Kanaan sub-district / Diyala province

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Abstract:

Background: Failure to thrive (FTT) is a common pediatric problem particularly in developing countries. The prevalence of FTT varies according to the different populations.

Objectives: to determine the rate of FTT among children aged 1-5 years in Kanaan district / Diyala province.

Subjects and methods: This study was conducted in the primary health care center of Kanaan district / Diyala province over a period of 6 months (November 2007 to April 2008). Hundred children aged 1-5 years were chosen randomly and each child was subjected for measurement of body weight, mid-arm circumference (MAC), and hemoglobin (Hb) level.

Results: The rate of FTT was 47% according to the body weight and 21% according to MAC. The majority of cases of FTT according to the body weight were mild cases (80.8%) while the moderate cases represent 19.2% from the total cases. The study also revealed that the rate of FTT increases as the level of maternal education decreases. Furthermore, increasing rate of FTT among children with exclusive breast feeding, as well as among children with unemployed mothers were found. There were more cases of anemia among children with FTT.

Conclusion: It was concluded that FTT is highly prevalent in the studied area & possibly in Iraq (although most cases were mild), and the main causes of FTT are failure of breast feeding & low maternal education.

Keywords: Failure to thrive, Body weight, Children.

Introduction:

FTT is diagnosed in an infant or a child whose physical growth is significantly less than that of his or her peers, and it is often associated with poor developmental and cognitive functioning ^[1]. Prompt diagnosis & intervention are important for preventing malnutrition and developmental sequelae ^[2]. FTT usually refers to growth < 3rd or 5th percentile or a change in growth that has crossed 2 major growth percentiles (i.e., from above the 75th percentile to below the 25th percentile) in a short time ^[1]. Most FTT is non-organic, and if a careful history & examination do not suggest a physical cause, then investigations will usually be non-contributory ^[3]. The degree of FTT for weight is usually measured by calculation this parameter as a percentage of the median value for age based on appropriate growth chart, i.e. mild(75-90%), moderate(60-74%), severe(<60%).^[1] The nutritional causes (accounting 80%) include undernutrition, environmental deprivation and neglect, whereas the organic causes (accounting 20%) include chronic diseases involving several systems like gastrointestinal, respiratory, cardiopulmonary, endocrine, and neurologic systems, as well as, chronic infectious diseases and congenital problems ^[4] . This study aimed to determine the prevalence of failure to thrive among children aged 1-5 years in Kanaan district / Diyala province.

Materials and methods:

This study is conducted in the primary health care center of Kanaan district / Diyala province over a period of 6 months from November 2007-April 2008. Hundred children aged 1-5 years were collected randomly by systematic random method. Full history was taken concerning the name, age, address (urban or rural), birth weight, history of prematurity, type of milk feeding in infancy, period of breast feeding in infancy, time of introduction of solid food, chronic diseases, parents job and education; number of siblings and child order; water supply and sewage system. Physical examination was performed concerning the body weight using UNISCALE weight measure, mid-arm circumference(MAC) using MAC measure sheet, and general examination. Hemoglobin levels were taken for each child & compared with normal values ^[1]. Data were statistically analyzed using chi square test.

Results:

The results showed that of the total number of 100 cases, 47 of them had FTT according to the body weight (38 of them had mild FTT and 9 of them had moderate FTT). According to MAC, there were 21 cases had FTT (14 of them had mildly-moderately low MAC & 7 of them had severely low MAC), table (1).

Table (1): The percentages of FTT according to body weight(Wt) & MAC.

	Normal		FTT		Total	
	No.	%	No.	%	No.	%
Body weight	53	53%	47	47%	100	100%
MAC	79	79%	21	21%	100	100%

The results also revealed that the percentage of FTT among children with illiterate mothers was 61%, those whose mothers read & write or primary school mothers was 50%, with secondary school mothers was 39%, and with high graduate mothers was 9%. The differences were statistically significant between these groups ($p < 0.05$), table (2).

Table (2): The distribution of FTT according to the Maternal education.

Body weight Maternal education	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
Illiterate	14	39	22	61	36	100	
Read & write, & primary school	15	50	15	50	30	100	
secondary school	14	61	9	39	23	100	
High graduate	10	91	1	9	11	100	
Total	53	53	47	47	100	100	P<0.05 [S]

It was also found that the percentage of cases of FTT presented during the 2nd year of life was 48.8%, during the 3rd year of life was 50%, during the 4th year of life was 46.2, during the 5th year of life was 25%, and during sixth year of life was 100%.

The percentage of FTT in females was 55.3% and in males was 42%. The distribution of FTT according to the age group revealed insignificant differences ($p > 0.05$), table (3).

Table (3): The distribution of FTT according to the children age groups.

Body weight Age(Yr)	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
≥1	21	51.2	20	48.8	41	100	
2	16	50	16	50	32	100	
3	7	53.8	6	46.2	13	100	
4	9	75	3	25	12	100	
5	0	0	2	100	2	100	
Total	53	53	47	47	100	100	P>0.05 [NS]

Other findings in the study were that the percentage of FTT in breast fed children was 57.3%, in artificially fed children was 14.3%, and in mixed fed children was 33.3%. The distribution of FTT according to the type of milk feeding revealed a statistically significant differences ($p < 0.05$), table (4).

Table (4): The distribution of FTT according to the type of milk feeding.

Body Weight Type of milk Feeding	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
Breast	29	42.7	39	57.3	68	100	
Artificial	12	85.7	2	14.3	14	100	
Mixed	12	66.6	6	33.3	18	100	
Total	53	53	47	47	100	100	P<0.05 [S]

The percentage of FTT in children who were milk fed for up to 1 year was 25% and for those who are fed for more than 1 year was 49%. This result was statistically insignificant ($p>0.05$), table (5).

Table (5): The distribution of FTT according to the period of milk feeding.

Body Weight Period of milk feeding	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
≤ 1 year	6	75	2	25	8	100	
> 1 year	47	51	45	49	92	100	
Total	53	53	47	47	100	100	P>0.05 [NS]

The study also revealed that the percentage of FTT in children who are 1st and 2nd orders was 42.3%, in children who are 3rd and 4th orders was 36.4%, and in those who are 5th, 6th, & 7th orders was 56.4%. The difference was statistically insignificant ($p> 0.05$), table (6).

Table(6): The distribution of FTT according to the child order.

Body Weight Child order	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
1 st & 2 nd	30	57.7	22	42.3	52	100	
3 rd & 5 th	14	63.6	8	36.4	22	100	
5 th , 6 th , & 7 th	9	34.6	17	65.4	26	100	
Total	53	53	47	47	100	100	P> 0.05 [NS]

The percentage of FTT in children living in urban areas was 43.7%, and for those living in rural areas was 52.8%. This result was statistically insignificant ($p> 0.05$), table (7).

Table (7): The distribution of FTT according to residency.

Body Weight Residency	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
Urban	36	56.3	28	43.7	64	100	
Rural	17	47.2	19	52.8	36	100	
Total	53	53	47	47	100	100	P>0.05[NS]

The study also revealed that the percentage of FTT in children whose mothers are housewives was 52%, and for those whose mothers are workers was 23.5%. This represents a statistically significant difference between these two groups ($p < 0.05$), table (8).

Table (8): The distribution of FTT according to the job of the mother.

Body Weight Mother job	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
Housewife	40	48	43	52	83	100	
Worker	13	76.5	4	23.5	17	100	
Total	53	53	47	47	100	100	P<0.05 [S]

The percentage of FTT in children with pipe water supply was 44%, for those with other than pipe water supply (rivers, tanks, others) was 56%. This result was statistically insignificant ($p > 0.05$), table (9).

Table (9): The distribution of FTT according to the water supply.

Body Weight Water supply	Normal		FTT		Total		P value
	No.	%	No.	%	No.	%	
Pipe	42	56	33	44	75	100	
Others (rivers, tanks)	11	44	14	56	25	100	
Total	53	53	47	47	100	100	P>0.05 [NS]

The study also revealed that the percentage of low Hb level (anemia) in children with FTT was 62%, & for those with normal weight was 41% which represent a statistically significant finding ($p < 0.05$), table (10).

Table (10): The distribution of anemia according to the body weight.

Hemoglobin \ Body weight	Normal		Low		Total		P value
	No.	%	No.	%	No.	%	
Normal	31	59	22	41	53	100	
FTT	18	38	29	62	47	100	
Total	49	49	51	51	100	100	P<0.05 [S]

The percentage of anemia in children with mild FTT was 55% and in children with moderate FTT was 89% . This difference was statistically insignificant ($p > 0,05$), table (11).

Table (11): The distribution of anemia according to the severity of FTT

Hemoglobin \ Severity of FTT	Normal		Anemia		Total		P value
	No.	%	No.	%	No.	%	
Mild	17	45	21	55	38	100	
Moderate	1	11	8	89	9	100	
Total	18	38.3	29	61.7	47	100	P>0.05 [NS]

Discussion:

The significantly high prevalence of FTT in our study can be explained by bad socioeconomic conditions, poor general services, inadequate medical care, low maternal education , and poor nutrition in the area studied which may reflect the general condition of Iraqi children. This high prevalence of FTT is comparable with study reported by Bistrain *et al.* (1976)^[5] who stated that the prevalence of malnutrition in general medical patients was 44% or greater. However it is much higher than that reported by Elice *et al.* (1990)^[6] who found a prevalence of 9.6% among infants in the united states. On the other hand, this high figure is even much

higher than that estimated by the National Center for Health Statistics and World Health Organization reference population^[7].

With decreasing level of maternal education, there were more cases of FTT. This result is consistent with those reported by Hess *et al.* (1977)^[8], Pollite (1975)^[9], De Viller *et al.* (2002)^[10] in South Africa and Robinson *et al.* (2001)^[11]. This can be attributed to the better social condition, nutrition, handling of the child, and access to the medical care in more educated mothers. However, Wright *et al.* (2006)^[12] found no relation between FTT and maternal education status.

The present study also revealed that FTT in children with exclusive breast feeding is more than that in children with artificial or mixed feeding. This can be attributed largely to the failure of breast feeding, prolonged breast feeding, delayed or inadequate introduction of solid food. This finding is consistent with some previous reports which suggest some previous explanation^[13-16].

This study revealed more FTT in children whose mothers are housewives than those whose mothers are workers. This may be explained by the fact that the worker mothers usually have higher education, better economic status, less family size, & better access to the medical services. Other studies show controversial results^[13]. Matulesy *et al.* (1996), stated that working mother use to do "early weaning practice" with very high mixed feeding practice, but Suharyono *et al.* (1997) in Indonesia observed that mothers have to go to work because they have to support their family income, but unfortunately most of them ignore the main task of care of their children.

In our study, the percentage of anemia in children with FTT was more than those without FTT. This finding is consistent with some previous reports^[17-20]. This reveals that FTT is a primarily nutritional problem or it may be due to chronic medical problems, although anemia can be present in children with normal body weight.

This study recommends improving the general condition of the area studied and possibly for all Iraqi people by improving the socioeconomic status and improving the general medical services, as well as, we need to create a national Iraqi

growth charts and further studies are required to detect the real size of FTT as an emerging nutritional problem in Iraq.

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معدل حالات فشل النمو لدى الأطفال من سن شهرين الى ٥ سنوات

في ناحية كنعان / محافظة ديالى

مهدي شمخي جبر (بوردي عراقي في طب الأطفال) ، كلية الطب / جامعة ديالى

تمهيد: إن حالات "فشل النمو" هي من الحالات الشائعة لدى الأطفال خاصة في الدول النامية. تختلف معدلات انتشار حالات فشل النمو باختلاف التجمعات السكانية.

الأهداف: تحديد معدل انتشار حالات "فشل النمو" لدى الأطفال بعمر ١-٥ سنوات في ناحية كنعان – محافظة ديالى.

الأشخاص وطرق العمل: أجريت هذه الدراسة في مركز الرعاية الصحية الأولية في ناحية كنعان / محافظة ديالى للفترة من تشرين الثاني/٢٠٠٧ ولغاية نيسان/٢٠٠٨. تم اختيار العينة المتكونة من ١٠٠ طفل اختياراً عشوائياً وتم قياس وزن الطفل و(محيط منتصف العضد) ونسبة خضاب الدم لكل طفل.

النتائج: لقد وجد بان معدل حالات " فشل النمو" هو ٤٧% حسب وزن الجسم و ٢١% حسب (محيط منتصف العضد) وان غالبية حالات "فشل النمو" حسب وزن الجسم هي حالات بسيطة (٨٠.٢%) بينما شكلت الحالات المتوسطة نسبة ١٩%. من مجموع الحالات. لقد اظهر التحليل الاحصائي في هذا البحث أن حالات "فشل النمو" لدى الأطفال تزداد مع انخفاض المستوى الثقافي لأمهاتهم و إن هناك معدلاً أكبر لحالات " فشل النمو" بين الأطفال ذوي الرضاعة الطبيعية الحصرية و بين الأطفال ذوي الأمهات غير العاملات (ربات البيوت) و إن هناك معدلاً أكبر لحالات (فقر الدم) بين الأطفال المصابين بحالة "فشل النمو".

الاستنتاج: هناك معدلات عالية لحالات "فشل النمو" في ناحية كنعان –محافظة ديالى وان معظم هذه الحالات هي حالات بسيطة وان الأسباب المقترحة لذلك هي فشل الرضاعة الطبيعية وتدني المستوى الثقافي للأمهات.

الكلمات المفتاحية: "فشل النمو"، وزن الجسم، الأطفال.