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Weaning practices of children in Mosul Cross –Sectional Study

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ABSTRACT:

Background :

The transition from breast feeding exclusively to use of family foods completely is very vulnerable period of the time when many infants become malnourished, contributing significantly to the high prevalence of malnutrition in children under 5 years of age worldwide. **Aim**: This study aims to assess the local weaning practices of a group of children in Mosul &it's association with socio-demographic factors &nutritional status of children

-Patients& Method:

To achieve the aim of the present study a cross-sectional design was adopted. The unit of present study was a mother who came to the primary health centers for routine vaccination of any of her children.

The chosen mothers were included by systemic sampling technique in which every third mother had been taken. All children of the selected mother who were 2-24 months of age were included in the interview, through visiting the primary health centers in Mosul four time per week .

Results:

Complementary food introduction was done before 4 months of age 26%&only 15.3%were weaned after 7months of age، Weaning practices were categorized into bad, moderate &good level according self-administrated scores for each recommended practices for infant feeding& weaning. Accordingly the present study show that about 65% of the sample were using bad &moderate levels of practices& the rest had good level. This study revealed that low maternal education & high parity having 4 children or more & low socioeconomic state of family associated with using bad practices (C.I=3.27-12.23;P<0.001), while employment of mothers associated with using good weaning practices(C.I=0.27-0.78;P<0.01.

Conclusions:

Complementary food introduction was done before 4 months of age 26%&only 15.3%were weaned after 7months of age &19.6% of infants were exclusively breast fed.

The study show that early weaning <4 month was associated with diarrhea, otitis media & food allergy, but had no relation with underweight while, weaning after 7 months of age significantly associated with underweight.

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Introduction

Weaning is a process of expanding the diet to foods & drinks other than breast milk or infant formula .It is a gradual process, starting between 4-6month of age& progressing over period of months to the age of 1year, when a child should take similar foods to the rest of family (1). The transition from exclusive breast feeding to full use of family foods is very risky period of the time when many infants become malnourished(2). Mean metabolic energy intake in exclusively breast fed infants at 6 month is (525-574 kcal/d) & mean energy requirement about (632-649 kcal/d) leading to a gap between the energy provided by milk & energy needs by 6 months for many babies (3). By the age of 4 to 6 months, an infant is physiologically ready to expand his diet. However, solid food is a supplement to, not a replacement for breast milk or formula at this time (4) .Signs should be considered regarding needs of the infant to solid foods include: ability to sit up, a fading of the tongue-thrusting reflex so that the baby doesn't automatically push solid out of his mouth with his tongue, readiness to chew also an increased demand to nurse that is unrelated to illness, teething pain , & showing interest in foods, having head & neck control& ability to pick up food & put it in his mouth, to track a spoon & open the mouth also most of infants are ready for solid feeding when they've doubled their birth weight& they are at least 4 months of age(5,6 ,7). Early introducing of foods might lead to obesity(8)also mother become fertile quickly associated with infant malnutrition. But postponing weaning decrease in the risk of allergy, ear infections, respiratory illness &contaminated food (5,9,10).While Late weaning may lead to growth faltering & malnutrition & Micronutrient deficiencies(11)

Solid foods should be introduced gradually & individually &any new food should be offer the same food daily until the baby becomes accustomed to it &not to introduced new foods more often than every 1-2 week to monitoring signs of food allergy(skin rash, wheeze, diarrhea)& avoid it in the same time (12,6)

The order of introduction begins with cereal vegetables, meats &eggs can be accomplished in the following manner : 5-6 months cereals& fruits , 6-7 months meats& vegetables, 7-8 months Egg yolk, 8-9 months Egg white)(6,13). It has been found that early solid food introduction less than 4months of age because of foreign proteins from soy, rice, eggs, fish &chicken may have a T-cell mediated immune reaction leading to

mucosal inflammation with villous atrophy, diarrhea &failure to thrive (14),in the other hand late weaning may lead to malnutrition which decrease the immunity of the child & increase risk to frequent & severe type of diarrhea (15). Malnutrition rates increase from age of 6 &18 month which is the period of complementary feeding inappropriate (bad) practices such as: The delayed introduction of complementary foods, low energy & nutritional density of foods offered ,feeding in small amount at meals (16). Mothers are the most plentiful Primary Health Care workers around the world &education improves their abilities in health matters in general; nutrition, sanitation and disease management. it is found that the mother knows about health &nutrition the better is the over all quality of her children diet. It may be postulated that mothers education would affect their children's nutritional status by similar mechanisms. Education also influences the socio-demographic characteristics of these mothers: their age at marriage, parity, socioeconomic status in the family & in the community. On the other hand, ignorance, unemployment and low income are important risk factors jeopardizing child survival (16,17) .

Patients &Method :

Administrative Agreement

Prior to data collection an official permission has been obtained from Ninevah Health Office to conduct the study. Also ethical consents was taken from mothers before starting the interview

This study has been carried out in Mosul city four primary health care centers (PHCC) had been chosen randomly because they were the most nearest centers for investigator,2 in the left health sector& another 2 in the right health sector.

Al-Hadba PHCC, Babb Al-Bathe PHCC , Al-Suker PHCC, and Al-Arabi PHCC

The study took 6 months period from c first of November 2016,& to end on 30th of April 2017.

A simple sample size of the present study is 634 child who were taken throughout the study period, through regular visits one time per week for each center

Cross sectional study

All mothers have been personally interviewed by the investigator herself& a separate questionnaire form has been filled from each mother's child .

The questionnaire form include:

1. Information about the child: sex, age(month), birth order, weight.
2. Sociodemographic data including [mother's age, no. of children, educational level of maternal, employment status, type of family

(nuclear or extended which include grandmother.[(

3. Economic status of family was determined by certain scores

4. Information about the child's feeding: type of feeding, duration of exclusive breast feeding

5. Problems during weaning occurrence of diarrhea, food allergy& otitis media

6. Information about feeding practices:-such as method of feeding & using separate dish, gradual weaning& food safety practices, food storage .

Weight is measured by uniscale of UNICEF weight for age was used to determine the nutritional status of children

Statistical analysis:

Computer feeding, tabulation& statistical analysis has been carried out using lab top, SPSS under windows program. The approach to data consisted of two steps descriptive then analytic .

To summarize the data regarding mother's practices related to child weaning ,weaning practices were divided into bad, moderate &good, that was done by giving score for each correct practice so that, ≤4=bad ,5-8=moderate,>8=good .

To determine the presence or absence of any relation between weaning practices &certain variables, using x 2 test where odd ratio and 95% CI were calculated.

Aim of study :

The aim of present study is to explore local weaning practices of children in Mosul during the year 2016-2017.

Specific Objectives:

1. To describe the socio demographic characteristics of the study sample

2.To determine the effect of the following socio-demographic factors on knowledge& practices of mothers regarding weaning.

a-Maternal age.

b-Maternal educational level.

c-Maternal job .

d-Maternal parity .

e-Socioeconomic status.

3.To identify the unfavorable weaning practices .

4.To explore the possible association between certain weaning practices especially the age of introduction of solid food & weight for age sex specific

5-To identify complications during solids feeding of infants (diarrhea , food allergy, otitis media) &their association with the timing of weaning.

Results:

Descriptive approach:

Demographic characteristic of the study population:

Table(1): Distribution of the study sample according to child characteristics (n=634).

Characteristics		
Birth order	**No.**	**%**
1	221	34.9
2	150	23.7
3	105	16.6
4+	158	24.9
Type of feeding in the 1st 6 month of life		
Exclusive breast feeding	124	19.6
Bottle feeding	159	25.1
Mixed	351	55.3
Nutritional status		
Well-nourished	403	63.6
Under weight	231	36.4
Age of introduction of solid food(months)		
< 4	164	25.9
4-6	373	58.8
> 7	97	15.3

Table (1) revealed that the highest frequency of sample among children who was 1st child in the family (34.9 %)&the majority of them was on mixed feeding(55.3%) while only (19.6%) was exclusively breast fed, more than one half (58.8%) weaned in correct age between 4-6 months &only (15.3%) were weaned after 7 months &(36.4%) of the sample were under weight.

Table(2): Distribution of the study sample according to socio- demographic characteristics(n=634)

Characteristics		
Maternal age in (years)	**No.**	**%**
<20	124	19.6
20-29	376	59.3
30-39	120	18.9
≥40	14	2.2

Maternal education		
Illiterate	206	32.5
1ry	227	35.8
Intermediate	95	15.0
2ry	51	8.0
University& more	55	8.7
Employment state		
House wife	571	90.1
employed	63	9.9
Maternal parity		
1	196	30.9
2-3	278	43.8
≥4	160	25.2
Occupation of father		
Jobless	17	2.7
Unskilled	333	52.5
Skilled	284	44.8
Residence		
Urban	541	85.3
Suburban	53	8.4
Rural	40	6.3
Type of family		
Nuclear	167	26.3
Extended	467	73.7
Socioeconomic state		
High	138	21.8
Moderate	404	63.7
Low	92	14.5

Table(2) reveals more than two third of mothers were between 20-40 years of age (78.2%)& about one third of them were illiterate (32.5%), & the majority of them were lived in urban area (85%),& (extended family) represent (73%) of the sample. Ten percent of mothers were employed& most of them were Para 2-3 (43.8%) ,about(64%) of sample were have moderate economic state.

Table (3): Distribution of the study mothers according to bad weaning practices.

Bad practices	NO.	%
Sudden weaning	30	4.7
Non active feeding	240	37.8
Duration between new foods<5 days	549	86.6
Used drinking bottle	69	10.9
Store food outside refrigerator	181	28.5
Used food over night	93	14.7
Did not use separate dish for baby	237	37.3
Chewing food before giving it to the baby	42	6.6
Did not wash hands before feeding	35	5.5
Did not use boiled water	231	36.4

The results only 4.7% of mothers weaned their babies abruptly , &37.8%of them non-actively fed their children, the majority of mothers give more than one new food in the week 86.6% &only 10.9% using drinking bottles in feeding as in table3. About 28.5% of mothers keep baby's food outside refrigerator&14.7% used food overnight. Thirty seven percent of them did not use separate dish for the baby, only 6.6% chewing food before giving it to baby ,5.5% did not wash hands before feeding, but more than one third 36.4% did not use boiled water .

Table (4) Association of sociodemographic factors of mothers with quality of weaning practices.

Practice	Bad+ moderate		Good		95% C.I.	p-value
	No.	%	No.	%		
Maternal age						
<20	81	19.7	43	19.4	0.64-1.47	NS
20-40	321	77.9	175	78.9	*	*
≥40	10	2.4	4	1.8	0.22-2.37	NS

Education						
Illiterate	177	43.0	29	13.1	3.27-12.23	<0.001
primary	136	33.0	91	41.0	0.86-2.80	NS
Intermediate	55	13.3	40	18.0	0.73-2.78	NS
secondary	17	4.1	34	15.3	0.24-1.14	NS
University	27	6.6	28	12.6	*	*
Employment						
Employed	30	7.3	33	14.9	0.27-0.78	<0.01
Housewife	382	92.7	189	85.1		
Parity						
4+	123	29.9	37	16.7	1.78-4.48	<0.001
2-3	183	44.4	95	42.8	1.13-2.38	0.01
1	106	25.7	90	40.5	*	*
Socio-economic						
Low	69	16.7	23	10.4	1.73-5.51	<0.001
Moderate	275	66.7	129	58.1	1.48-3.25	<0.001
High	68	16.6	70	31.5	*	*
Total	412	100.0	222	100.0		

This table reveals that after doing combination between bad &moderate practices &analysis of the study, there's no significant statistical association between maternal age &practices for ≤20 years old mothers (C.I=0.64-1.47;P>0.05),while there is a significant association with employment status of mother against using of bad practices (C.I=0.27-0.78;p<0.01)& high parity (≥4)

had a significant association also, multiparas was significantly they was nearly three times more prone to use bad practices (C.I=1.78-4.48; P<0.001),also there's significant association of low socioeconomic on the quality of weaning practices (95%C.I=1.73-5.51;p<0.001).

Table (5) Association of age of introducing solids &complications during weaning period:

Age of introducing solids (month)	Nutritional status				95% C.I.	p-value
	Malnourished		Normal			
	No.	%	No.	%		
<4	53	22.9	111	27.5	0.63-1.37	NS
4-6	127	55.0	246	61.0	*	*
>7	51	22.1	46	11.4	1.37-3.38	<0.001
Age of introducing solids (month)	**Diarrhea**				**95% C.I.**	**p-value**
	Yes		**No**			
	No.	**%**	**No.**	**%**		
<4	88	42.9	76	17.7	3.24-7.22	<0.001
4-6	72	35.1	301	70.2	*	*
>7	45	22.0	52	12.1	2.25-5.82	<0.001
Age of introducing solids (month)	**Food allergy**				**95% C.I.**	**p-value**
	Yes		**No**			
	No.	**%**	**No.**	**%**		
<4	15	46.9	149	24.8	1.61-8.32	<0.01
4-6	10	31.3	363	60.3	*	*
>7	7	21.9	90	15.0	1.05-7.62	<0.05

Table (5) there is a significant association of underweight with late weaning (>7 months) (C.I=1.37-3.38;P<0.001)& the early introduction of solids was associated significantly with development of diarrhea & food allergy in children(95%C.I=3.24-7.22;P<0.001)& (CI=1.61-8.32 ;P<0.01).

Discussion

Breast milk is the ideal food for the healthy growth &development of infants. only 19.6% of the total children included in the present study were exclusively breast fed during the first 6 months of life this result is not consistent with that reported in the study done in Saudi Arabia by AL Zaheb A R(18) in their study 32% of children were exclusively breast fed ,both figures are less than that reported by Abbas F F&Habeeb S I in Basra which was descriptive cross-sectional study where less than (50%) of children were exclusively breast fed in first 6 months of age(19).

In the present study complementary feeding was started early before 4 months in 26% of children &more than one half of them were weaned in recommended age by WHO between 4-6 months of age (58.8%) & only 15.3% were weaned after 7 months, while in Hendricks et al found that first 2 years of life the majority of children more than two-thirds of their study sample were weaned between 4-6 months of age &only 5.8% weaned later on (20).

In the present study &after categorizing weaning practices into good &bad practices:

Maternal age <20 years had no significant association with using bad weaning practices but mothers were >40 years associated with good practices usually those have more children &more experience in weaning process. Similar result were found by Hendricks et al in the cross-sectional analysis study of maternal &child characteristics associated with infant &toddler feeding practices which revealed that being married &older were associated with multiple positive practices(20) . Batrex J et al in the study of which mothers wean their babies prematurely from full breast feeding found a paradoxical results which indicate that maternal age was significantly associated with feeding practices (especially with age of introduction of solid food& age of breast feeding) (21).

Maternal education in this study were significantly associated with bad practices, illiterate mothers had significant association with using bad weaning practices because bad information & believes about infant feeding from grand mothers,this is similar to the study of Rose et al(22) where they found that mother educational attainment was also positively correlated with age of introduction of solid foods(22) . Unlike these result was found in 2016 in hazard analysis by Emmanuel et al which indicated that higher education will increase risk of early introduction of foods &an earlier stop to breast feeding (23).

Employment of mother had a significant protective effect against bad weaning practices this may refer to that working mother usually has better economic level &educational level so use good weaning practices &child care, this results was consistent with what was reported in Ethiopia by Gebremechial et al that occupation & education influenced the frequency &duration of breast feeding in addition to the nutritional quality & the type of weaning food (24), but this is not agree with the study done by Abbas F &Habeeb (19) in (Basra) who reported that working mother may depend on nurseries or baby sitter for help in child care &feeding which could be deficient or inappropriate(19).

In the present study high parity was associated significantly of using bad practices, this may be due to multiparous mothers are too busy than those low parity this similar to in Bhandari et al study in which showed that parity is one of important factor affecting weaning process (25).

The present study revealed that low economic level of family is significantly associated with using bad practices this may be due to lack of suitable food for baby ,fuel for cooking ,TV & Radio which may help mothers by health education programs ,this result was consistent with what reported by Selvakumar & Bhat (26) in 2007 which indicated that both the start of weaning &current feeding practices have highly significant association with income level & employment condition.

In this study about one third of children complained of diarrhea (32.3%),especially those weaned before 4 months .Prentice et al. found that infant weaned before 3 months were significantly more affected by diarrhea& &infants weaned after 4 month were no more likely to have episode of diarrhea between 4-6 months than those weaned earlier(27).In the present study found that weaning after 6 months of age significantly association of diarrhea & those infants complain of malnutrition become more susptible to recurrent diarrheal episodes. Bhandari et al trials of age at weaning, found that slightly increased risk of diarrhea were in those weaned later 20 weeks (25).

This study show more than 1/3 of children were under weight (36.5%)&there's no significant association between early weaning <4 months &nutritional status ,while weaning after 7 months have significant association of being underweight that is similar to what was found in by Prentice et al in study of age at weaning and Infant growth (27).

In the present study there's early weaning had associated with food allergy while in late weaning the risk will decrease to about three times this results similar to Foicchi et al who suggested that early introduction can increase the risk of food allergy, that avoidance of solids can prevent the development of specific food allergies(28).

Conclusions

1-More than one quarter of infants studied was weaned early before 4 months (26%), while only 15.3% were weaned after 7 months&19.6% of infants were exclusively breast fed.

2- There's no significant association between maternal age &weaning practices, while low maternal education, high parity &low socioeconomic state were a significant associated with bad practices, but maternal employment was a significant associated with practices.

3-The study show that early weaning <4 month was associated with diarrhea, otitis media & food allergy, but had no relation with underweight while, weaning after 7 months of age significantly associated with underweight.

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