ASSOCIATION OF MALNUTRITION WITH WEANING PRACTICES AMONG INFANTS IN PAKISTAN

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ABSTRACT

OBJECTIVES

To determine the association between weaning practice and malnutrition among infants.

METHODOLOGY

This descriptive cross-sectional study was conducted at the Department of Pediatrics in Saidu Group of Teaching Hospit als, Swat, with 133 participants selected using a non-probability consecutive sampling technique. Infants of both genders, aged one year or younger, and Pakistani nationals with mentally sound mothers were included, while premature infants (born before the 37th week of gestation) and those with congenital diseases were excluded. Demographic information, height and weight measurements, weaning practices, and the age at which regular weaning was initiated were collected. Weaning practices (at <6 months, 6 months, and >6 months) were recorded by questioning mothers. The association between weaning practices and malnutrition was determined using the chi-square test at a significant level of $p<0.05$.

RESULTS

The male-to-female ratio was 1.2:1, with 50.9% wearing a prosthesis for less than a year and the minimum range being 3-6 years (13.66 %). Only 31 had stereognosis positive but were completely satisfied with their prosthesis, while 85 who were unsatisfied were found to have positive sensory perception. Statistical analysis for all groups shows a p-value of 0.000 for patient satisfaction with denture wear which is statistically significant. Most patients with the least duration of wear found their stereognosis positive and were unsatisfied with the prosthesis and vice versa. The chi-square test shows a statistically significant value for both groups of stereognosis i-e 0.0001..

CONCLUSION

Early initiation of weaning (before six months of age) was associated with a lower incidence of malnutrition among infants.

KEYWORDS: *Infants, Malnutrition, Weaning Practice, Mothers*

INTRODUCTION

Weaning is the process of gradually introducing solid or semi-solid foods into an infant's diet after they have been solely consuming breast milk or formula.[1] Weaning is a significant change in a child's diet. The WHO guidelines on when to start weaning have changed from recommending starting at 04-06 months to recommending starting at 06 months.[2] Baby feeding practices encompass the eating patterns and measures that mothers and childcare providers implement, directly affecting a child's nutritional health.[3] The weaning period, which starts with mixed feeding and ends with the cessation of breastfeeding, is an especially crucial phase for the child's well-being.[4] This period puts the child at risk of malnourishment and exposes them to repeated and severe infections due to the loss of immunity passed on from their mother.[5] For infants, having a balanced diet is crucial for proper development, particularly during the initial two years of life. Breastfeeding alone can provide all the necessary nutrients up to four months of age, but as infants reach four to six months old, breast milk alone becomes insufficient to fulfil their energy and nutritional needs. Therefore, introducing semi-solid foods alongside breastfeeding is essential to cover these deficits, known as the weaning process.[6] Early weaning can harm infants in developing economies due to factors such as a lack of alternatives to breast milk, contamination of food, and replacement of breast milk with less nutritious options.[7] Delayed introduction of supplementary food can lead to dietary disruptions and malnutrition. The World Health Organization suggests that infants should receive complementary foods in addition to breast milk starting at six months of age.[8,9] A study by Parveen et al. Suggests that early weaning (before six months) may reduce infant malnutrition risk. They recommend early weaning for the prevention of malnutrition among children.[2] The purpose of this study was to investigate whether there is a relationship

between the weaning practice and the occurrence of malnutrition, specifically retarded growth, in infants in our population. Identifying such a relationship can help educate the general public and inform local and national child health policies about appropriate weaning practices, reducing malnutrition among infants. This study aimed to determine the association between weaning practice and malnutrition among infants.

METHODOLOGY

This descriptive cross-sectional study was conducted at the Department of Pediatrics in Saidu Group of Teaching Hospitals, Swat, between February 1, 2022, and December 30, 2022. The study enrolled 133 participants using a non-probability consecutive sampling technique. Ethical approval was obtained from the concerned ethical committee of the hospital. The sample size was calculated using the formula [$n = Z^2 P (1 - P) / E^2$], where Z was 1.96 for a 95% confidence level, P was the frequency of weaning at more than six months in the previous study (62.1%)[2], and E was the desired margin of error (7%). After explaining the study in detail to the parents, verbal informed consent was obtained from all participant's parents, with the assurance of maintaining the confidentiality of their data. The study's inclusion criteria were infants of both genders, aged one year or younger, and Pakistani nationals with mentally sound mothers. Premature infants (born before the 37th week of gestation) and those with congenital diseases were excluded from the study. Demographic information, height and weight measurements, weaning practices, and the age at which regular weaning was initiated were collected. The height and weight of each infant were compared with WHO's standard growth chart to calculate their growth percentile. Infants with less than the 50th percentile were labelled as malnourished.[10] Weaning practices (at <6 months, 6 months, and >6 months) were recorded by questioning mothers. The collected data were analyzed using SPSS version 22. Numerical data were presented as means and standard deviations, while qualitative variables were reported as percentages and frequencies. The association between weaning practices and malnutrition was determined using the chi-square test at a significant level of $p<0.05$. In case of violation of the chi-square assumption, Fisher's exact test was used.

RESULTS

Table 1: Gender and Age Distribution of the Sample

Variable	Characteristic	n(%)
Gender	Female	60(45.11)
	Male	73(54.89)
Age group	1-3	22(16.54)
	4-6	53(39.85)
	7-11	58(43.61)

Table 2: Frequency of Mother's Education, Weaning Practices, Breastfeeding, Weaning food and Malnutrition

Characteristics	Characteristic	N = 133[1]
Mother Education	Higher	14(10.53)
	Illiterate	35(26.32)
	Matric	23(17.29)
	Primary	61(45.86)
Weaning Practice	<6 months	16(12.03)
	>6 months	66(49.62)
	6 months	51(38.35)
Breastfeeding	Absent	18(13.53)
	Present	115(86.47)
Weaning Food	Liquid	32(24.06)
	Semi-liquid	89(66.92)
	Solids	12(9.02)
Malnourished	Absent	92(69.17)
	Present	41(30.83)

Table 3: Association of Malnutrition with Gender, Mother Education, Weaning Practices, Breastfeeding and Weaning Foods

Variable	Characteristic	Malnutrition		P-Value *
		Absent, N=92[1]	Present, N=41[1]	
Gender	Female	39(42.39)	21(51.22)	0.45
	Male	53(57.61)	20(48.78)	
Mother Education	Higher	11(11.96)	03(7.32)	0.049
	Illiterate	19(20.65)	16(39.02)	
	Matric	14(15.22)	09(21.95)	
	Primary	48(52.17)	13(31.71)	
Weaning Practices	<6 months	13(14.13)	03(7.32)	0.005
	>6 months	37(40.22)	29(70.73)	
	6 months	42(45.65)	09(21.95)	
Breastfeeding	Absent	14(15.22)	04(9.76)	0.565
	Present	78(84.78)	37(90.24)	
Weaning Food	Liquid	26(28.26)	06(14.63)	0.202
	Semi-liquid	59(64.13)	30(73.17)	
	Solids	07(7.61)	05(12.20)	

*chi-square test

DISCUSSION

Most individuals (69.17%) were not malnourished, while 30.83% were malnourished. These findings suggest that primary education was the most common level of education among the mothers in this sample, and the weaning age was typically after six months. Breastfeeding was prevalent, while a minority of individuals were not breastfed. Semi-liquid weaning foods were the most commonly given type of food, and malnourishment was present in a significant proportion of the sample. A study was conducted on 300 participants on weaning practices and infant nutrition among mothers in Nigeria. The findings revealed that most mothers started weaning their infants in the fourth month and provided commercial and homemade weaning foods based on demand or a schedule. The most common weaning foods given to infants were bananas, corn pap, and cerelac. While some infants had a normal nutritional status, others were malnourished. Therefore, the study recommends encouraging mothers to wean their babies with legumes, green leafy vegetables, soymilk, fish, and fruits to improve their nutritional status.[11,12] In our study, we did not record

individual's names, but the most common weaning food was semi-solid, similar to a banana, corn pap, and cerelac. So these results are inconsistent with our findings. Different regions and countries have varied weaning practices influenced by cultural norms and socioeconomic factors, which could result in infant malnutrition due to inadequate calorie intake or an imbalance of nutrients.[13,14] Weight and height are commonly used indicators of nutritional status in infants, measured against WHO growth charts.[15,16] A study by Parveen et al. included infants who were either started on weaning before six months of age (56.5%) or at/after six months of age (43.5%).[2] Among infants started on weaning before six months, 51.3% were underweight, and 25.7% were shorter than the 50th percentile. In contrast, among those who began on weaning at/after 6 months, 59.8% were underweight, and 26.4% were shorter than the 50th percentile for their age. The study suggests that early weaning (before six months) may be linked with a reduced risk of infant malnutrition. The study included infants who started weaning before six months (56.5%) or at/after six months (43.5%). Among infants started on weaning before six months, 51.3% were underweight, and 25.7% were shorter than the 50th percentile. In contrast, among those who started on weaning at/after six months, 59.8% were underweight, and 26.4% were shorter than the 50th percentile for their age. The study suggests that early weaning (before six months) may be linked with a reduced risk of infant malnutrition. Our study differed from Parveen et al., especially in weaning time, as most participants weaned after six months. These differences can be due to a lack of awareness among mothers in our populations. Another study in Karachi reported that infants who were weaned at the recommended age of 4-6 months had lower malnutrition rates according to anthropometric measurements, compared to those who were weaned earlier or later. Moreover, significant statistical differences were observed between infants fed homemade nutritious food and those who consumed commercial food.[17,18] These results are consistent with current findings. The study had some limitations, including a small sample size relative to the population affected by the problem. Additionally, a cross-sectional study could not establish a cause-and-effect relationship between weaning practices and malnutrition.

LIMITATIONS

The study may have a small sample size or may not be representative of the general population in Pakistan. This can limit the generalizability of the findings to the larger population.

CONCLUSIONS

It can be concluded that proper weaning practices help in reducing the incidence of malnutrition in infants. The findings suggest that weaning should ideally be started before six months of age, and mothers with lower education levels should be provided with education and support to improve the weaning practices for their infants.

CONFLICT OF INTEREST: None

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CONTRIBUTORS

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