WEANING PRACTICE IN EGYPT AN UPDATED REVIEW ESSAY

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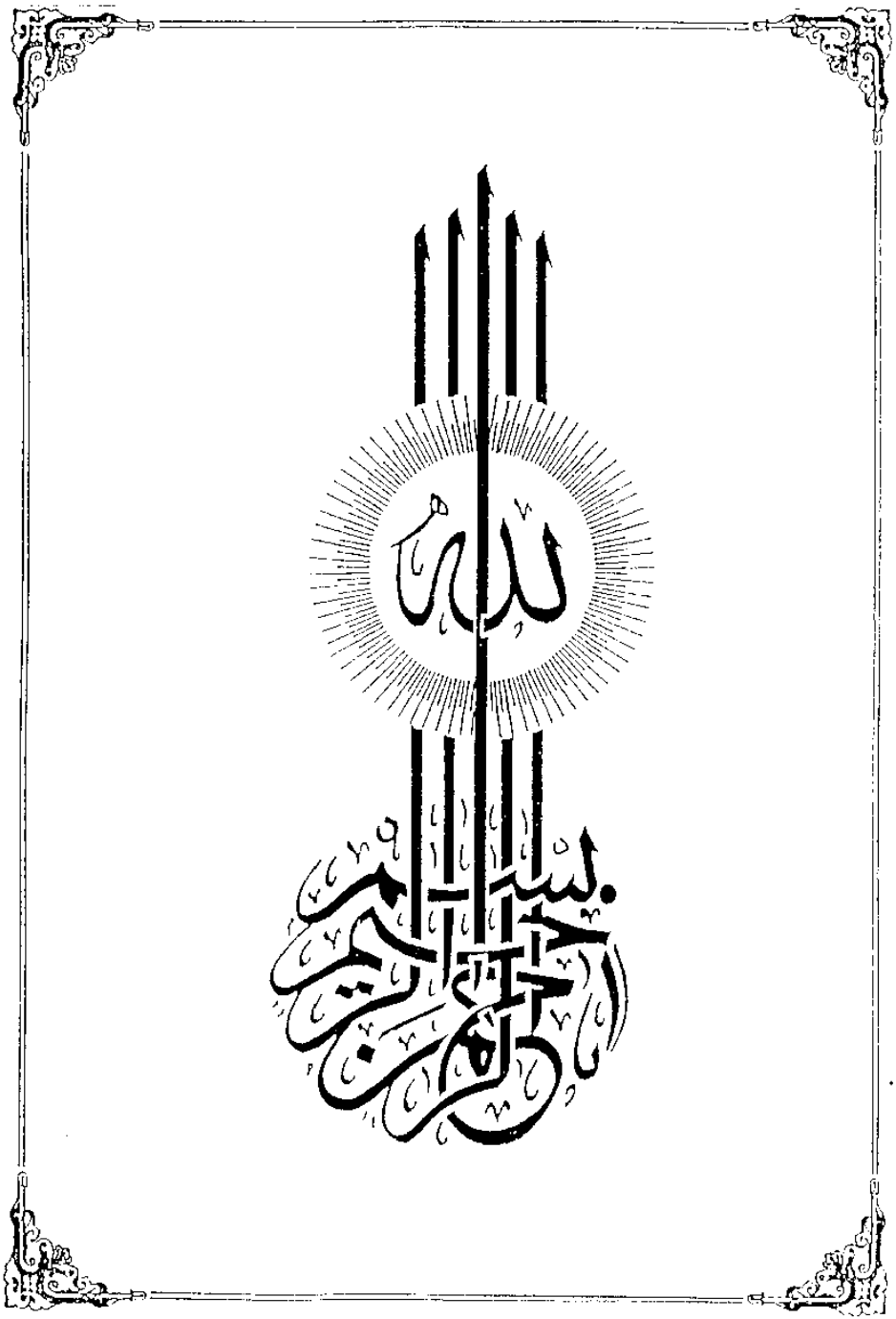

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According to Dorland Medical Dictionary, to wean is to discontinue the breast feeding of an infant with substitution of other feeding habits, while definition of feeding in Stedman's Medical Dictionary is to deprive permanently of breast milk and to nourish with other foods *(Gretchen, 1982)*.

WHO (World health organization) defines weaning as the gradual replacement of breast milk with another food in the diet of the child until finally this leads to cessation of breast milk. It means more than removing the child from the breast. Weaning includes the long critical period when the child adapt to other adult foods while continuing to be breast fed. Any item besides breast milk given to the infant in any manner, solid, semisolid or liquid represent a weaning food *(Brown, 1978)*.

The Unicef definition states that "weaning is a transitional stage when young child's diet gradually changes from one of milk alone to diet based on what the family eats. *(Editorial, 1984)*.

Weaning begins when the child is introduced to food other than breast milk (or breast milk substitute) and is completed when the child is accustomed to regular family diet. During weaning the child should continue to be breast fed since breast milk is an important nutritional supplement to weaning foods.

It is emphasized that weaning process is naturally a lengthy one lasting many months rather than few weeks and that the provision of additional foods should not inhibit a mother capacity to lactate, as long as these foods are administered in the correct fashion. So, by the end of the weaning process, the infant no longer receives breast milk or milk from bottle. *(White-head, 1985)*.

Weaning is a vulnerable period in an infant's life during which the child is still growing extremely rapidly and has just been to run out of maternal protective antibodies. During weaning the incidence of diarrhea and malnutrition is high making the rate of mortality greater than any other time. *(Darwish et al., 1982).*

Adequate feeding is essential for the rapid growth and development of infants and children. It supplies the body with energy and nutrients required for growth and maintenance of cells and biological process *(Khalil, 1981).*

In many parts of the world malnutrition results simply from unavailability of sufficient food but in a significant extent, malnutrition also occurs from adverse dietary practices either from ignorance or bad customs. These can be corrected by use of foods that are locally available. Infants and young children are frequent victim of customs that restrict protein in their diets. These restrictions are particularly damaging during the time of weaning which corresponds with time of rapid growth *(Mohsen, 1982).*

Weaning has also a social and psychological aspects. The special relationship between mother and child evolves as the child becomes more independent and other family members assume responsibility for the child. Weaning practices are related to many factors as economic, social, cultural and environmental factors. These factors play a role in what children eat and how they will be fed. The weaning process varies widely among different cultures: When the practice is initiated and terminated, the variety, quality, quantity of the weaning foods and the manner in which the food is provided. The variation in practices ranges from providing a food even before the first breast feeding to feeding nothing but breast milk for as long as 12 months, and include feeding from a cupped hand to use of modern feeding bottle *(Underwood, 1985).*

Poverty, social deprivation, large family size and low educational standard of mother are the most important socioeconomic factors associated with malnutrition *(Robson & Wadsworth, 1977)*.

The home preparations of appropriate weaning foods will depend on the knowledge and attitude of mothers. The mother is principally responsible for feeding the child and she is the key to efforts that improve infant feeding practices, so maternal health education must be relevant. It can be relevant and successful only with the most respectful consideration of the community's customs, attitudes, practices and taboos *(Editorial, 1979)*.

For these reason's clarification of actual practices of weaning among egyptian mothers and detection of association between the pattern of the practices and some biological socioeconomic variables may help in planning of more practical and relevant health education programs.

Causes and importance of starting weaning:

There are two major items responsible for the initiation of weaning at the proper time. Items related to the mother and those related to infants.

The highest percentage of lactating mothers stopped breast feeding due to another pregnancy *(Marlow, 1973- Osuhor, 1980- Darwish et al., 1981)*. It is a strain on pregnant woman's physical strength to supply enough of the essential food elements for both the suckling infant and the fetus and at the same time meet her own physical needs.

Inadequate milk flow due to bad nutritional status of the mother or psychic disturbance is another important cause *(Marlow, 1973)*. This usually takes place at six months of age. Marginally nourished mothers have been shown to be able to produce an average of 400 to 500 ml of milk at 18 months and this is not adequate to meet the infant's requirement of nutrition *(Koldovsky, 1978)*.

Mother's illness usually play an important role in beginning of weaning. Chronic disease of mother such as cancer, disease of kidneys, heart and blood diseases as well as severe long lasting infections may necessitate weaning of the infant ***(Marlow, 1973)***. Some mothers weaned their children as they believed that they were hungry (demanding more frequent food) ***(Wilkinson & Davies, 1978)***. Another reason for initiation of weaning is the fact that mothers may be unduly emotionally stressed by the breast feeding process or its effects on their life style. The sequence of such stress may include endocrinologic response that result in an inadequate lactational performance. Such an adequate performance may also occur when women in developing countries are stressed by excessively heavy work loads ***(Dagan et al., 1983)***.

Other reasons for stopping lactation is the use of the contraceptive pills and mother death. Religion, attainment of the traditional age of weaning and observed retardation in physical and mental development of infants by mothers are other factors that interact in initiation of weaning. Advises from the doctors and neighbors may be one of the causes that force mothers to start weaning and this may be at proper or improper time ***(Hood et al., 1978)***.

On the other hand from the infant's side, there are other causes to initiate weaning. The infant becomes old enough to eat usual family diet. Baby's illness or allergy to mother's milk may be other causes to start weaning ***(Darwish et al., 1981)***.

Poorly fed women in the developing countries can produce approximately 500 to 600 ml of milk daily. But for proper growth, infants at a weight of 5 kg or at age 3 to 4 months require more than 850 ml of breast milk daily ***(Brown, 1978)***. Thus the infant's nutritive needs fails to be met be breast milk alone resulting in dietary inadequacy. This situation calls for supplementary or complementary feeding with pre weaning foods. So, mothers must supply young children's nutritive requirement to enable them to grow, to be healthy and to avoid the development of malnutrition especially protein energy malnutrition ***(Jelliffe & Jelliffe, 1979)***.

Weaning food is required in order to meet the energy and nutrient needs of the weaning infant in order to maintain adequate growth and tissue function *(Underwood & Hofvander, 1982)*, proper weaning at 6 months is required also to initiate certain physiological function, studies show that severe malnutrition at this age in infant leads not only to reduction in zymogen granules in the pancreas but also to a reduction in the secretory capacity of pancreatic acini *(Thompson & Trowell, 1951)* and *(Barbezat & Hansen, 1968)*. Similar studies of intestinal biopsies from marasmic children revealed blunting of villi and elongation of crypts *(Lebenthal, 1985)*. Lastly, the importance of initiating weaning at a proper time on infant side, can be summarized as follows:

1- A child cannot tolerate more than one liter of fluid 1 day and so, more solid foods should be added gradually to cover this extra needs.
2- With growth the baby require more food which cannot be supplied by breast milk alone.
3- To train the GIT (gastrointestinal tract) to digest starch as well as more solid foods.
4- Supply sufficient nutrient in which milk is particularly deficient (iron, Vit. B. & Vit. D).
5- To educate the child independence by using spoon or cup *(Abbassy et al., 1972)*.

Physiological changes and adaptation during weaning process:

At early infancy, gastric acid secretion is immature *(Agunod et al., 1969)*, bile salt levels in the duodenal fluids are low *(Watkins et al., 1973)*, pancreatic amylase is not available in the duodenal fluid during the 1st four months of life when pancreatic lipase is also very low, in addition the pancreatic acinar cells are not responsive to pancreozymin *(Lebenthal, 1985)*.

Harfouche 1980 noticed that among the learning experiences of weaning is acquainting the infant with the taste and consistency of variety of foods other than breast milk in order to stimulate appetite and acceptance.

One of the major differences bet the preweaning and post-weaning diet is the carbohydrate. In the milk of all mammals, the major carbohydrate is B galactoside lactose. During and after weaning, the carbohydrates become α glucoside (Starches and sucrose). Because these classes of carbohydrates are very different in their chemical properties, different enzymes are needed for their hydrolysis and utilization. On the other hand, the late appearance of pancreatic amylase only at 6 to 9 months after birth when starch is introduced into infant's diet might imply that the diet is playing a role in the expression of the amylase gene. ***(Lebenthal, 1985)***. It is also possible that appearance of pancreatic amylase has evolved to coincide with the time of starch feeding such that genetic programming will permit the production of pancreatic amylase in anticipation of starchy foods. Most food products contain starch in substantial months. Because infants less than 6 months of age have low level of pancreatic amylase in their duodenal lumen, maldigestion and inadequate caloric intake may result in supplying starchy foods. So available nutrients are important in modifying the developmental pattern of intestinal and pancreatic enzymes ***(Lebenthal, 1985)***.

The weaning process is complex. The nutritional characteristics of this process are important, but other factors play a role as well. Gastrointestinal functions as well as higher nervous activity and endocrine activities especially adrenal and thyroid are effect ***(Koldovsky, 1985)***.

Goldstein et al., 1971 have shown that abrupt weaning with glucose as the only source of carbohydrate increases sucrase activity and this increase in activity may be caused by adrenal glands or a new dietary substance. Adrenal stimulation occurs within 24 hrs following premature weaning.

Serum cholesterol, triglycerides, phospholipid and total lipid levels are abruptly decreased in premature weaning. Substantial changes occur in activity of various enzymes in the liver ***(Palkovic et al., 1976)***.

A study was done to investigate milk composition during the weaning period. After 3 months from onset of weaning the concentration of protein and sodium were more 142 and 220% of base line values respectively. Iron concentration was 172% of the base line value, calcium concentration did not change and that of zinc fell to 58% of the base line value *(Garza et al., 1983)*.

Methods of suppression of lactation:

The method of separation of infant from breast is often very relevant, particularly how and when this is carried out. In different communities, this may be at various ages, with either an abrupt or gradual approaches. The process of separation is sometimes reinforced by the application of bitter or unpleasant substance to the breast (including garlic, Red pepper or soot).

Weaning from the breast may be by sleeping apart from the mother or by actual geographical separation as by sending the child away to stay with a relative. Another example to stop breast feeding is to apply tetracycline to the nipples but it is import to notice that a low dose tetracycline taken by children in this way may increase the chance of bacterial resistance *(Barnabas and Lovel, 1982)*. There is no doubt that sudden separation of the child who previously has been in close contact with the mother both day and night can lead to psychological illness "The maternal deprivation" that may result from sudden separation from breast is characterized by poor appetite and vomiting which are of obvious importance nutritionally *(Jelliffe, 1969)*.

McLaren, 1965 showed that mothers of malnourished children had weaned nearly every case abruptly because they were pregnant again. In rural areas and in some urban areas, low income mothers used to introduce their children to adult foods between 12 and 24 month without reducing the number of breast feeds *(Hussein et al., 1983)*. This is not correct as breast milk should be withdrawn gradually *(Abdulla, 1982)*.

Beginning and ending of weaning:

When should solid foods be given? This is the most difficult question to be answered because there are few objective studies and many opinions *(Woodruff, 1978)*.

The age at which solid food is introduced, varies in different communities from few weeks until the end of the 1st year *(Mclaren and Burman, 1976)*.

The mother should ensure supplementation of her breast milk with the most digestible, high protein locally available foods from about 5 to 6 months *(Jelliffe 1970 & Berg, 1972)*. In other words the mean age of weaning beginning can be 15 ± 9 weeks *(Gunn, 1984)*.

Dietary energy needs usually range from an average of 120 k cal/kg of body weight up to 3 months decreasing gradually to 100 k cal/kg at 6 to 8 months. Using these factors and assuming that breast milk contain 69 k cal/100 ml, it can be calculated that a male child, growing along National Center for Health Statistics (NCHS) 50th percentile, needs about 900 ml at 2 months, 1100 ml at 4 months and 1250 ml at 6 months. Such levels of milk out put have however only been observed in a minority of women with high lactational capacity. This would suggest that majority of exclusively breast fed babies would need supplementation within the first three months of life *(Whitehead, 1985)*.

As regard the onset of weaning there is a phenomenon called infant initiated weaning. Sometimes it is referred to as self weaning. In a study to investigate this phenomenon 46% of the infants were reported by their mothers to initiate weaning by themselves. The onset of this behavior occurs most frequently at 5-9 months of age. Most of mothers attribute it to their infant's increased exploratory and nutritional desires *(Clarke & Harmon, 1983)*.