

## **Summary**

Breast milk is the best food a mother can offer her baby on the physical, psychological and mental levels. In addition exclusive breastfeeding promotes health, helps to prevent infant and childhood diseases.

Children who are breastfed have better neurodevelopmental outcomes, and the duration of breastfeeding also affects a child's intelligence.

In the present study we aimed to evaluate the effect of exclusive breast feeding on cognitive function assessed by IQ test in pre-school children and to assess differences in intelligence between breastfed and formula fed children.

This study was conducted in Aga hospital, Algomhoria general nursery and Lotf private nursery for preschool Children present in Aga city, Dakahlia governate. The period of the study extended for one year from October 2010 to September 2011. This study included 90 children aged between 3 to 5 years. They were divided into two groups according to their early infant feeding practices as follows:

### **Group I:**

This included 57 healthy children who were exclusively breastfed comprising 26 males and 31 females with a mean age of  $52.2 \pm 8.1$  months. They were classified according to duration of exclusive breastfeeding into:

- **Group (1a):** this included 19 healthy children who were exclusively breastfed for 3 months.
- **Group (1b):** this included 38 healthy children who were exclusively breastfed for 6 months.

### **Group II:**

This group included 33 healthy children who were artificially fed or mixed fed but not exclusive breastfeeding from birth or during the first 3 months, 16 males and 17 females with a mean age of  $48.7 \pm 9.8$  months.

All the studied cases were subjected to the following:

1. Complete history taking including personal, antenatal, natal and postnatal history.
2. Complete physical examination including anthropometric measurements.
3. Laboratory investigations which included complete blood cell count.
4. Assessment of cognitive function by (IQ) tests which included one of the following:
  - Wechsler Intelligence Scale for preschool children- Revised (WISC-R).
  - Social IQ.

**The results of the current study were as follow:**

- Breastfeeding provides superior nutrition for optimum development when exclusive during the first six months of life as shown by the significantly higher IQ in the breastfed group as compared to the artificially fed group of up to 15 points for children breastfed for 6 months and 4 points for those exclusively breastfed for 3 months.
- Cognitive function of the child is increased with the increased duration of exclusive breastfeeding up to six months of age.
- Even among the moderate socio economic status IQ of those exclusively breastfed for a longer duration is still higher than the artificially fed with differences of up to 13 points. The education of the mother positively influenced the IQ among children who were exclusively breastfed for 6 months but not the other groups. This may reflect a stronger degree of interactive learning, communication, responsiveness and thereby learning ability in these children.
- There were no statistical significant differences between breastfed group and artificially fed group as regard age, sex or order of the child.

- There were no statistical significant differences between breastfed group and artificially fed group as regard age of the mother, family size or education of the mother.
- There was significant increase in breastfed group as regard feeding at night when compared to artificially fed group ( $p < 0.001$ ).
- As regard anthropometric measurements there was significant increase in weight in artificially fed group than breast fed group ( $P < 0.05$  and  $P < 0.01$  respectively), but with no differences as regard length, length centile, head circumference and mid arm circumference.
- As regard history of rickets, there was significant increase in artificially fed group when compared to breastfed group.
- There was a significant delay in motor and language development in artificially fed group than breastfed groups ( $P < 0.01$ ).
- Cognitive function assessed by IQ test was significantly higher in breastfed group than artificially fed group ( $P < 0.001$ ).
- There was significant increase in IQ in breastfed exclusively for 6 months subgroup than breastfed 3 months) subgroup ( $p < 0.001$ ).
- IQ is significantly higher in breastfeeding for 3 months and 6 months subgroups in comparison to artificially fed group.
- There was a significant increase in IQ of the child with increase in socioeconomic standard in artificially fed group, but with no difference in breastfed group.
- There was significant positive correlation between education of mother and IQ of the child in artificially fed group but no significant positive correlation in breastfed 3 and 6 months subgroups.

### *Summary*

- There was a significant positive correlation between duration of exclusive breastfeeding and IQ of the child in breastfed 3 and 6 months subgroups.
- There was significant positive correlation between age of cessation of breastfeeding and IQ of the child in breastfed 3 months, but no significant correlation in breastfed 6 months subgroup.
- There was a non-significant correlation between Age of mother and IQ of the child in breast fed 3 and 6 months subgroups and artificially fed group.
- There was a non-significant negative correlation between family size and IQ of the child in artificially fed group, breast fed 3 and 6 months subgroups.
- There was a non-significant negative correlation between order of child and IQ in breastfed 3 and 6 months subgroups and artificially fed group.

## **Conclusions**

- Breastfeeding provides superior nutrition for optimum development when exclusive during the first six months of life as shown by the significantly higher IQ in the breastfed group as compared to the artificially fed group of up to 15 points for children breastfed for 6 months and 4 points for those exclusively breastfed for 3 months.
- Cognitive function of the child is increased with the increased duration of exclusive breastfeeding up to six months of age.
- Even among the moderate socio economic status IQ of those exclusively breastfed for a longer duration is still higher than the artificially fed with differences of up to 13 points. The education of the mother positively influenced the IQ among children who were exclusively breastfed for 6 months but not the other groups. This may reflect a stronger degree of interactive learning, communication, responsiveness and thereby learning ability in these children.

## **Recommendations**

- An effective program to encourage breastfeeding should be done for all mothers before delivery and to be supported after birth in which education about the hazards of unnecessary supplements to the breastfed child in the first six months of life.
- Encourage exclusive breastfeeding for the first 6 months of life as it provides optimum mental and physical development of the children.
- Continue breastfeeding for up to 2 years of age.
- Proper feeding brochures should to educate mothers about healthy feeding pattern.
- Educate mothers about the importance of interaction with their children as read to them as early as possible and play by toys with them.
- Explain to mothers the importance of continues reading to their children.
- Promotions of new concept about nurseries that it is a place for increasing cognition and communication not for spending times only.