

## **Influence of a short duration of breast-feeding on malnutrition in children in Morocco**

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In this study, the incidence of maternal lactation and its repercussion on weight during childhood were studied. The weights of 6,500 children born in eight Moroccan towns between 1992 and 1995 have been analysed from birth to 24 months together with duration of breast-feeding, socio-economic variables, family size, parent' occupation and mother's level of education. Mothers with higher levels of education breast-fed their child for a shorter time than mothers who had received less education and who generally didn't work outside the home. Malnutrition is observed in children belonging to lower classes who have been breast-fed during a short period (i.e. less than three months).

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### **Introduction**

Children's growth depended on genetic potentialities, family size, life style, socio-economic environment, infections, nutrition and the availability of medical care. Of all these factors, nutrition is the most prominent to directly or indirectly affect the child's future development. There is also the ability of human milk to provide children with adequate nutrition and minimize the possibility of infectious diseases. (Lestradet & Desjeux, 1977-, Stini *et al.* 1980). A number of studies have examined the survival advantages of breast-fed children. (Gindratt, 1971, Gyorgy, 1971; Jeliffée & Jeliffée, 1973; Matta, 1971; Reddy *et al.* 1977; Barabra, 1979; Pitz, 1976). Human milk is also perfectly adapted to the child's organism (D'Adler, 1970). Allan S. Cunningham, 1977, has shown that breast-feeding is associated with significantly less illness during the first year. It is well known that the incidence of infections in bottle-fed babies is higher than that in breast-fed infants; the difference has been attributed to the presence of various antibacterial factors in breast milk, such as immunoglobins, lysozyme and lactoferrin (Reddy, 1977). We know, however, that a child's first months of growth are a vulnerable phase where there is rapid growth with metabolic activity. (Dobbing, 1976) Also, during this period of life, a short duration of breast-feeding can affect children's health and in particular their weight, which can be below genetic potentialities. As nutrition in children has an impact on their health and as we know that there is a relationship between nutrition and socio-economic levels, we have divided our sample into two groups: the first being children from lower classes and the second children from the middle classes. We have also tried to see how a short duration of breast-feeding influences children's weight and, in particular, how it affects malnutrition in children.

### Material y métodos

Our study was undertaken in eight Moroccan towns: Agadir, Marrakech, Casablanca, Beni Mellal, Fez, Oujda and Tangier. The study involved the examination of the growth charts of 6,500 children born between 1992 and 1995. These records are held in 38 health centres and especially in S.M.I. (Sant, Maternelle et Infantile - Mother and Child Health Centres). The charts record the measurements of weight from birth to the age of 24 months, parents' occupation, and mother's level of education, the child's position in the family, the number of deceased children and the length of time the child was breast fed.

The duration of breast-feeding was analysed according to the mother's fertility, her level of education and the number of children deceased in the family. The measurements of weight were analysed through a transversal study and by using the characteristics of the families, -t was possible to divide the sample into two groups according to socio-economic class: children belonging to the middle classes and those belonging to underprivileged classes. The aim was to find the incidence of malnutrition within each group in correlation with breast-feeding lasting for less than three months. The percentage of children whose weight was below P3 (Reference N. CH. S) was calculated for children who had been breast-fed for less than and more than three months, for girls and boys. For calculation purposes, the fact that 3% of the children in a given population will have a body weight below P3 has been taken as a basis for the calculations. When the percentage is above 3%, the conclusion may be drawn that malnutrition is present.

### Results and discussion

#### *Characteristics of the children's mothers*

Parity diminished with the mothers' level of education: 27% of mothers who have more than three children are mothers with minimum education. More highly educated mothers with more than three children represented only 13.4% (table 1). 8.2 1 % of the mothers with a minimum of education had lost one child in the family while only 5.3 7% of the more highly educated mothers had lost more than one child in the family (table 2).

**Table 1.** Parity of women by level of education

| Parity | Total |       | Mother's education |       |      |       |
|--------|-------|-------|--------------------|-------|------|-------|
|        |       |       | 1                  |       | 2    |       |
|        | N     | %     | n                  | %     | n    | %     |
| 1      | 2521  | 37,93 | 1568               | 34,89 | 953  | 44,28 |
| 2-3    | 2616  | 39,36 | 1707               | 38,00 | 909  | 42,23 |
| 4-5    | 1028  | 15,47 | 807                | 17,96 | 221  | 10,26 |
| 6      | 420   | 7,22  | 411                | 9,14  | 69   | 3,20  |
| Total  | 6645  |       | 4493               |       | 2152 |       |

#### *Duration of breastfeeding*

62.12% of mothers with a minimum of education breastfed their children for more than 6 months. On the other hand, 52.16% of more highly educated mothers breastfed their children for more than six months, despite the constraints of their work outside the home. In both cases, more than 50% of mothers tried to breastfeed their children for more than six months (table 3).

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64.07% of mothers from lower classes breastfed their children for more than six months, as compared to 55.20% from the middle classes (table 4).

**Table 2.** % of death of children by level of education of women

|                             | Total |       | Mother's education |       |      |       |
|-----------------------------|-------|-------|--------------------|-------|------|-------|
|                             |       |       | 1                  |       | 2    |       |
| Women with a death children | N     | %     | n                  | %     | n    | %     |
| 0                           | 6158  | 92,54 | 4122               | 91,76 | 2036 | 94,60 |
| 1                           | 365   | 5,48  | 274                | 6,08  | 91   | 4,22  |
| 2-3                         | 109   | 1,63  | 85                 | 1,89  | 24   | 1,11  |
| 3+                          | 22    | 0,33  | 11                 | 0,24  | 1    | 0,04  |
| Total                       | 6654  |       | 4492               |       | 2152 |       |

**Table3.** % of children, by duration of breast-feeding and mother's education

| Duration of breast-feeding | Total |       | Mother's education |       |      |       |
|----------------------------|-------|-------|--------------------|-------|------|-------|
|                            |       |       | 1                  |       | 2    |       |
|                            | N     | %     | n                  | %     | n    | %     |
| <3                         | 470   | 11,50 | 306                | 5,22  | 164  | 12,20 |
| <6                         | 1660  | 40,67 | 1025               | 37,08 | 643  | 47,84 |
| <9                         | 2325  | 56,97 | 1424               | 52,02 | 900  | 66,96 |
| <12                        | 3037  | 74,41 | 1992               | 72,78 | 1140 | 84,82 |
| 12+                        | 944   | 23,59 | 745                | 27,22 | 204  | 15,18 |
| Total                      | 1081  |       | 2737               |       | 1344 |       |

**Table 4.** % of death of children by duration of breast-feeding and social class

| Duration of breast-feeding | Social Class |       |              |       |
|----------------------------|--------------|-------|--------------|-------|
|                            | Low class    |       | Middle class |       |
|                            | n            | %     | n            | %     |
| <3                         | 220          | 11,59 | 250          | 11,45 |
| <6                         | 682          | 35,93 | 987          | 44,80 |
| <9                         | 971          | 51,15 | 1355         | 62,07 |
| <12                        | 1367         | 72,02 | 1770         | 81,08 |
| 12+                        | 531          | 27,98 | 412          | 18,91 |
| Total                      | 1898         |       | 2183         |       |

*Percent of undernourished children by social class and duration of breastfeeding*

For calculation, the malnutrition is present when the percentage of children with weight < P3 NCHS) is above 3%. When the duration of breast feeding is short (less than 3 months), the malnutrition appears more accentuated for the boys and girls than when the duration of breast feeding exceed three months specially during the first year of life (figures 1 and 2). In the case of the middle classes (figures 3 and 4); a weak malnutrition appears in the boys at the fourth months and in the girls from the second to the fifth month. The duration of breast-feeding have not an important effect on malnutrition in this class. From the results obtained, -t can be seen that the duration of breast-feeding influences the incidence of malnutrition, especially in children from the lower classes. When the duration of breast-feeding is short (less than three months), malnutrition amongst the lower classes seems to be more pronounced, especially

during the first year of life. Conversely, when the duration of breast-feeding exceeds three months, malnutrition appears during the first year of life, but with a low level.

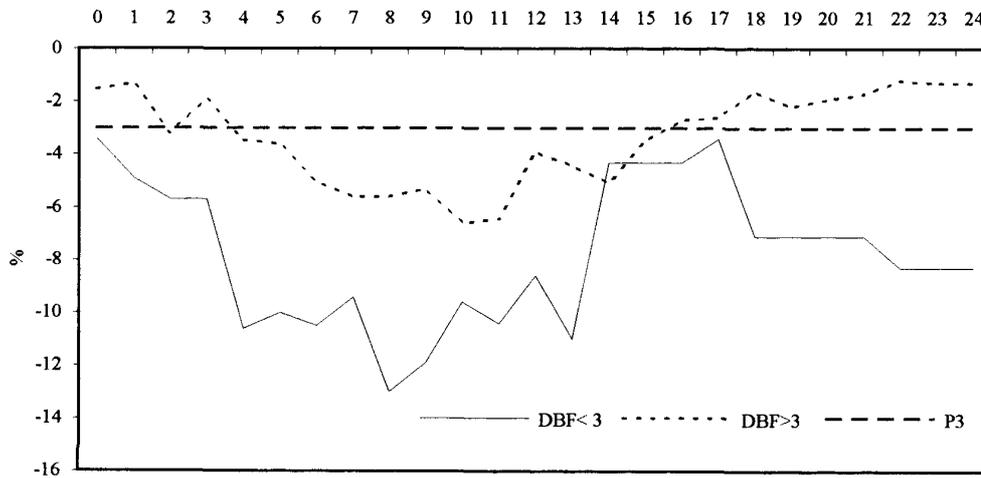


Figure 1. Frequency of children with weight <P3 (NCHS) by social class and duration of breast-feeding. Age in months (Low class boys)

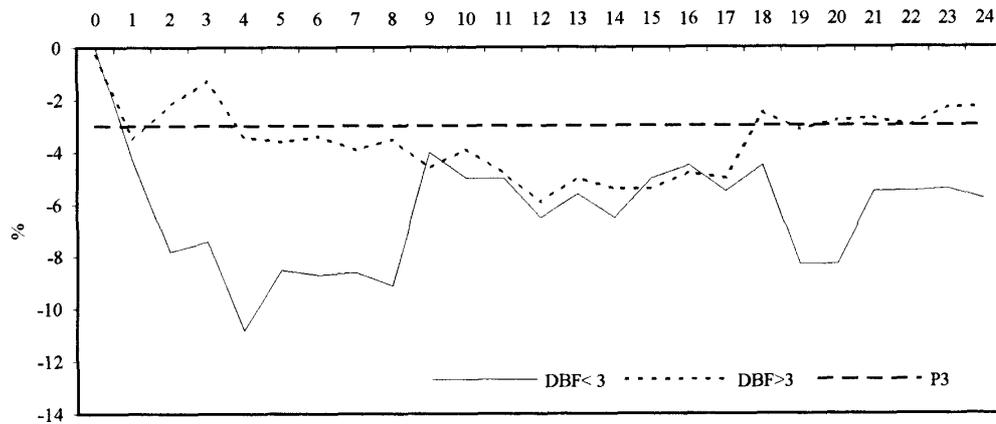
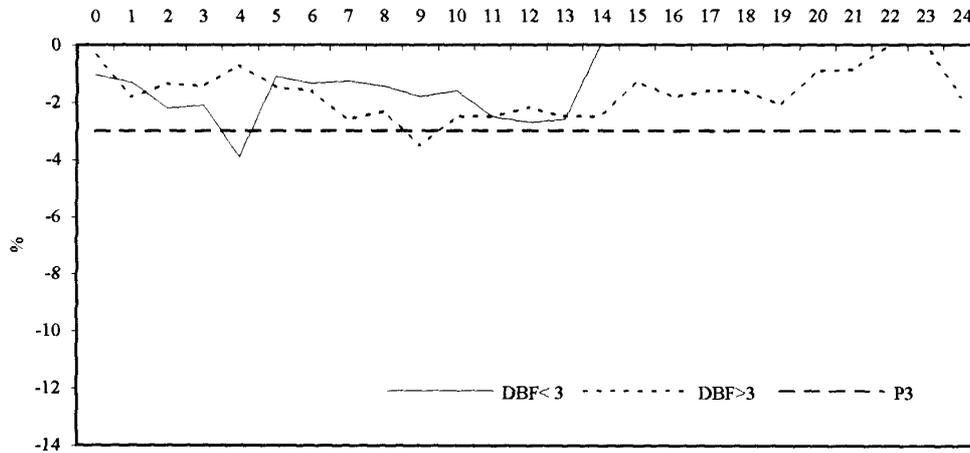


Figure 2. Frequency of children with weight <P3 (NCHS) by social class and duration of breast-feeding. Age in months (Low class girls)

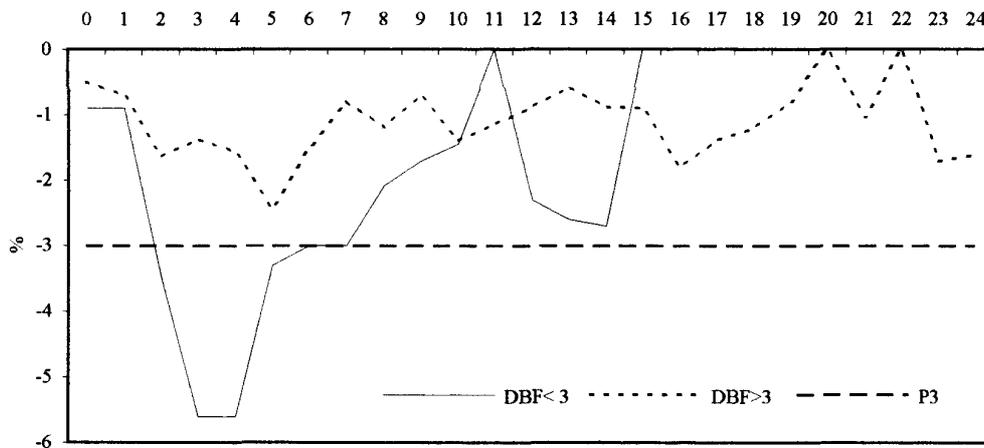
In all cases, when the duration of breast feeding less than three months, malnutrition appears during the first six months of life, which is a vulnerable period for children since they have not yet acquired their own immunity. It seems that the supplementary food given to the child and medical care in the case of illness are not enough to protect him or her from malnutrition. In fact, in a longitudinal study of children's feeding during the first year of life, it has been demonstrated that the introduction of proteins into children's diet was begun later in the lower classes. The dairy products given to the child are also insufficient (Belkeziz et Pagezy, 1997). In the middle classes, however, the duration of breast feeding does not seem to influ-

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ence malnutrition: the quality and quantity of supplementary foods, and the medical care given to the child seemed to be enough to avoid malnutrition.



**Figure 3.** Frequency of children with weight <P3 (NCHS) by social class and duration of breast-feeding. Age in months (Middle class boys)



**Figure 4.** Frequency of children with weight <P3 (NCHS) by social class and duration of breast-feeding. Age in months (Middle class girls)

**Conclusion**

In Morocco, more than 50% of mothers, even the more highly educated among them and those who work outside the home, tend to breast feed their children for more than six months. Where the duration of breast feeding is short (less than three months), children belonging to lower classes suffer from malnutrition, especially during the first year of life, which is a period characterized by rapid growth and (we know that during the first six months the child has not acquired his or her own immunity. In the middle classes, however, the duration of breast-

feeding does not seem to make a difference, at least to the incidence of malnutrition (note that the child can however be affected in a psycho-affective way). We came to the conclusion that mothers belonging to the lower classes and who cannot provide adequate breast feeding need to be able to request help in order to obtain suitable nutrition and normal growth for their children, especially during that period when the children's have not acquired their own immunity and cannot participate in the family meal

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### Resumen

Se ha estudiado la incidencia de la lactancia materna y sus repercusión sobre el peso durante de la infancia. Se han establecido y analizado el peso desde el nacimiento hasta los 24 meses de 6500 niños nacidos entre 1992 y 1995 en ocho ciudades marroquíes, junto con la duración de la lactancia materna, las variables socio-económicas, el tamaño de la familia, la profesión de los padres y el nivel de estudios de la madre. Las madres de nivel mas alto de estudios optaban por una lactancia materna mas corta que las madres de nivel mínimo de estudios y que no trabajaban fuera del hogar. La malnutrición se encuentra en los niños de las clases mas bajas quienes han recibido una lactancia materna corta (menos de tres meses).

### La influencia de una duración corta de lactancia sobre la malnutrición en Marruecos

*Palabras clave:* lactancia materna, malnutrición niños, Marruecos