

Comparison of growth and nutritional evolution stages in infants with working mothers and infants with housewife mothers in Isfahan

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ABSTRACT

Background: Studies have shown that the growth status of the children with working mothers is about 2 standard deviations lower than that of the children of housewife mothers. It seems that absence of mothers in the second stage of nutritional evolution (attachment), which is a very sensitive stage, has an important role in initiating and continuation of an appropriate supplemental feeding. **Materials and Methods:** In this cross-sectional study, 50 children of working mothers and 50 children of housewife mothers were selected by non-probable consecutive sampling method. Growth charts of the children in the two studied groups were assessed within seven age groups. Knowledge and attitude of the mothers regarding nutritional evolution stages in the two studied groups were assessed. Obtained data were analyzed using Software SPSS18 and statistical tests such as chi-square, *t*-test, and Mann-Whitney test. **Results:** Growth monitoring charts of the infants with housewife mothers were better than those of infants with working mothers in three out of seven age groups (12–18, 18–24, and 24–30 months) ($P=0.02$). Mean of knowledge and performance of the mothers about nutritional evolution stages was not significant in the two studied groups ($P>0.05$). **Conclusion:** This study showed that growth status of children with housewife mothers in their second year of life was better than that of children with working mothers. Awareness and knowledge of the mothers about nutritional evolution stages and education of mothers about appropriate behaviors in each stage helped them to recognize the children's needs and did their best for their children.

Key words: Attachment, child, growth monitoring, homeostasis, housekeeping, mother, separation, working

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INTRODUCTION

Birth of more than 1 million children in Iran annually is a very strong proof to address physical and psychological aspects of providing child health. Evaluation of anthropometric and nutrition indicators survey (ANIS) indicates that in Isfahan province, one in every nine children is suffering from severe underweight and one in every three or four children is suffering from slight underweight. Approximately 37% of the mothers do not know about growth monitoring chart and almost 70% of them do not have a correct interpretation of their

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child's weight curve.^[1] In this context, it seems that except health system, other factors such as educational poverty and maternal employment also have a significant role in this growth failure.^[2,3] According to the socioeconomic conditions and the current cultural development of women, in order to achieve better life standards, mothers in addition to playing maternal role prefer to work outdoors.^[4,5] The presence of a mother who can establish affection and trust relationship with the infant is an essential issue in proper nutrition of the child and his/her development and evolution.

There are some stages in the nutritional evolution of the child, in which presence and relation of the mother with infant in any stage had been particularly studied. The stages are as follows.

1. Homeostasis (physiological changes): In this stage, when the infant is 0–3 months of age, the mother helps to adjust the physiological and emotional states of her infant by responding to the behavioral characteristics and features of him/her, and with correct perception and interpretation of the infant's symptoms and signs, prepares him/her to feed.
2. Attachment: In this stage, when the child is 3–6 months old, social interaction between mother and infant is more obvious. In this stage, if the mother was unavailable, depressed, or indifferent toward the needs of the infant, the infant may not be fed sufficiently and be exposed at the risk of delay and failure to thrive.
3. Separation: In this stage, when the child is 6–36 months old, the balance between child's behaviors and parental control should be created. At the end of this stage, the child would be able to recognize himself/herself as an independent individual, and ordinary and usual support of the parents (not excessive support) would cause the child to have a better self-confidence. To achieve his/her independence, the child would attempt and mother's success in this stage is fully dependent upon her maternal nutritional behavior in the previous stage.

In fact, attachment stage is considered as the main phase of nutritional evolution.^[6-8]

Awareness of normal and abnormal behavior of the child in every stage reduces confusion of the mother about nutrition and nutritional behavior of the children.^[8] Many studies have reported that the physical growth of the children with working mothers had been approximately 2 standard deviations lower than that of the children with housewife mothers.^[9-12]

In studies on children's nutritional development and evolution in Azadegan Center of Isfahan in 2003, it was determined how knowledge and awareness of the mothers about children's nutritional evolution stages can change the growth process and children's nutritional evolution, and ultimately after training the mothers, there was a significant difference between the results before and after the training classes.^[8,13-15] Although in many countries like India, Tanzania, Bangladesh, and Bolivia, attention has been paid to the improvement of

children's status in growth and nutrition monitoring and reducing diseases through participation of mothers, mothers' behaviors in different nutritional stages were not studied properly.^[16] However, few previous studies had discussed the growth status of children with working and housewife mothers based on nutritional evolution process. Therefore, this study aimed to compare growth of the children with working and housewife mothers, and awareness and performance of mothers of both groups in association with nutritional evolution stages in Isfahan province.

It is hoped that the results of this study are applied in improving nutritional status of the children whose mothers are housewives or those children who are disadvantaged due to the presence of their mother a few hours in a day in administration of the health system for great future of our children in the community.

MATERIALS AND METHODS

This was a cross-sectional study done in four kindergartens in Isfahan and nearby health centers in 2007. The study samples included all the working and housewife mothers who had children aged 0–36 months and were selected by non-probable consecutive sampling method. Working mothers who had kept their children in the nursery school after 4 months of age and were not in the house at least for 4 hours due to occupation or education, and the children who had no chronic disease or were under treatment were included in the case group. The control group was selected from the relatives of the case group families; the mothers had no job or education outside home and had no job inside the house, such as carpet weaving or sewing. Written informed consent was obtained from the participants.

Data were collected using a questionnaire which had been used already in Azadegan in Isfahan and its reliability and validity had been confirmed previously ($\alpha = 72.53$).^[8]

The questionnaire included three parts: the first part studied the demographic characteristics of studied population including age of the child and mother, occupation, and parental education. The second part studied children's growth status based on country's growth charts in seven age groups (from birth to 3 months, 3–6 months, 6–12 months, 12–18 months, 18–24 months, 24–30 months, and 30–36 months). The assessment criteria of growth were based on curves on the growth monitoring card of the children whose mothers had been trained about that, and included appropriate (optimal) growth, slow growth, growth stop, growth failure, and excessive growth. Thus, the children who did not have growth monitoring card with complete charts could not enter the study. The third part related to evaluation of awareness and knowledge and performance of the mothers regarding the three stages of nutritional evolution. After explanation by the researcher about the importance of proper and accurate evolution, the questionnaires were filled in by mothers of both groups. The data of the questionnaire were entered in SPSS¹⁸ software and analyzed using the statistical tests of chi-square, Mann–Whitney, and *t*-test.

RESULTS

In this study, 50 working mothers and 50 housewife mothers were selected. The growth status of the children in the seven age groups and knowledge and performance of the mothers about nutritional evolution stages on three stages of “homeostasis,” “attachment,” and “separation” were compared in the two studied groups.

Growth status of the children aged 0–3 months was not significantly different in the two groups ($P=0.67$). Growth status of the children aged 3–6 months was not significantly different in the two groups ($P=0.97$). Growth status of the children aged 6–12 months was also not significantly different in the two groups ($P=0.8$).

Growth status of the children aged 12–18 months was significantly different in the two groups ($P=0.02$) [Figure 1]. Growth status of the children aged 18–24 months was significantly different in the two groups ($P=0.02$). Growth status of the children aged 24–30 months was significantly different in the two groups ($P=0.02$). Growth status of the children aged 30–36 months was not significantly different in the two groups ($P=0.24$) [Table 1].

DISCUSSION

In this study, we aimed to compare the growth and nutritional status of the children with working and housewife mothers and evaluate and compare awareness and performance of the mothers on the nutritional stages of children under 3 years of age. Nutritional evolution staging is a process which has a close association with children’s growth status, and unfortunately, has been found to be disregarded and neglected in the scientific and social and even educational circles in this study too. The obtained results of these researchers indicate that children’s growth status under 2 years had no significant difference in both the groups, but at the onset of 2-year-old period and the first 6 months of the third year of the child’s life, growth status and evolution of the children in the two groups had significant difference. According to the results, it seems that in the first 6 months of the child’s life, breast milk has nutritional variety and an appropriate and proportional food balance to fulfill the child’s needs, and due to low attention of the infant to the environmental stimuli and dependency on the breast milk in providing his nutritional needs and higher rate of sleeping of the infant in this stage, nutritional needs of the infant can be provided. If the mother, after 4 months of maternity leave (i.e. onset of the attachment stage), is forced to leave the infant for a few hours in a day, these nutritional needs will not be met fully. And since this period is the most essential stage of the nutritional evolution stages, establishing a close relationship between the child and mother is of high importance, so that physical, mental, and social growth of the child in the subsequent months would depend upon this relationship.^{16,71} Studies have shown that breastfeeding by mothers who work outside the house was equal and identical with the housewife mothers until they had not returned to their job, but after they restarted their outside work, their breastfeeding had decreased

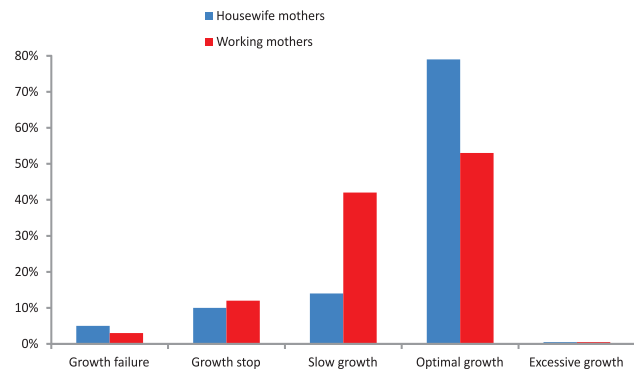


Figure 1: Frequency distribution in growth status of children aged 12–18 months in both groups

Table 1: Mean of maternal knowledge and performance in association with nutritional evolution stages in the two studied groups

	Mean	SD	Mean	SD	
Homeostasis ¹	5.06	1.1	5.02	0.97	$P=0.84$
Attachment ²	10.9	1.2	10.6	1.3	$P=0.19$
Separation ³	11.3	2.3	11.9	2.4	$P=0.26$
Total	27.4	3.6	27.5	3.6	$P=0.88$

¹0–3 months of age, ²3–6 months of age, ³6–36 months of age

tremendously.¹⁷¹ Therefore, one of the biggest barriers of breastfeeding is working outside the house,^{18,19} which will have negative effects on breastfeeding.²⁰

A study by Yimyam *et al.* in Thailand showed that back to work had a negative effect on breastfeeding.²¹¹ A study conducted in the United States at an international level among 40,015 mothers showed that the housewives had breastfed twice than those who had full time job.¹⁸¹

Thus, as revealed in the results of the study, ignoring this period can reduce the child’s growth rate secondarily in the subsequent months. Studies from other countries on the growth status of children with employed and unemployed mothers in different ages indicated a similar result, i.e. growth status of children with working mothers had a significant reduction in comparison with children who had housewife mothers.¹⁸⁻¹⁶¹ The studies of ANIS in 2006 and the study of growth status of children of Isfahan province in the current year indicated a reduction in physical growth status of the children in the second 6 months of their life.²²¹ However, according to the recent studies, growth monitoring card has been regulated based on children’s growth curves in which relative growth decline in the second 6 months of life is considered as natural.²³¹ International policy will be designed that in 2010, 75% of the mothers at birth and 50% of them in 6 months in postpartum period will be breastfed.

In the second 6 months of age, the need for calorie would also increase and breast milk will not meet the needs of children anymore; furthermore, increase in child’s attention to the external stimuli and environmental experiences such

as walking would cause the child not to be available easily for the mother like the past times, and therefore the need for calorie of the child will not be met through frequent breastfeeding and child nutrition assistance anymore. It should be noted that in this age, the breast milk cannot have nutritional variety, proportion, and suitable balance for the child. In addition, the child accustomed to night waking can reduce his/her energy during the day, and consequently mother's energy also would be reduced for giving more attention to the child and in attempting to increase the frequency of nutrition assistance. All of these reasons would cause changes in behaviors and normal relations which are required for social and nutritional behavior of the children and mothers. And mother, by force and obligation or improper behaviors like playing with the child while feeding him and even repeated and unnecessary rewarding, can damage the social behaviors of the child (which are established and developed in this age). Undoubtedly, emotional-psychosocial growth of the child has almost the same importance as nutrition and physical growth and development, if not more. Independence, self-confidence, self-esteem, and expressing and following the needs and requirements would be formed in close relationship with the parents, particularly with mothers who can be one of the important affecting factors on character formation of the children.^[24] Indifference, neglect, and ignorance and lack of awareness of the mothers and even administrators of health and educational centers about the nutritional evolution stages, and lack of correct behavior of the mother with infant in every stage would have irreversible harmful effect regarding child's future mental, physical, and social health. Moreover, behavioral, intellectual and even cultural differences among the nursery school teachers and even grandmothers and mothers of the children would increase his/her problems more than ever, and in fact, need of physical and intellectual independence on one hand and fatigue of the mother due to inadequate relations and behaviors with him/her on the other hand would highlight and worsen these inappropriate behaviors. In this regard, in a study, the obtained results showed that child's nutritional milk process disorder continues till the early part of third year of the child's life.^[11] However, studies have shown that children with working mothers are not always influenced by their mothers working outside.^[24] Huston *et al.* compared the sensitivity rate of children's needs and the quality of their balance during the first year of life in 580 working mothers with those of 473 housewife mothers and assessed the social and intellectual development of the children in 15-month-old, 2-year-old, and 3-year-old stages. They indicated there was no significant difference in the two groups and concluded that that the amount of time the mother spent with the child was not a decisive factor in establishing a strong maternal-child relationship, but the quality of interaction was important.^[25]

It is noteworthy that the role of parental educational level, household economic status, the number of the children in the family, cultural level of the community, and the knowledge level of the people regarding individual and social health should not

be ignored.^[15] Certainly, the awareness of the mother about these stages and training appropriate behavior in every stage would help her to realize her child's needs better and in attempting to meet those needs purposefully.^[2]

As the results show, the greatest factor which had negative impact on breastfeeding was returning to the job after the labor, so after 4-month-old period of the child, breastfeeding rate of the working mothers had been significantly lower than of non-working mothers.^[26,27]

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REFERENCES

1. Shams B, Golshiri P. Presenting a model for improvement of nutrition and growth promotion of children by the CIPP Evaluation Model in Isfahan. *Iran J Pediatr* 2005;15:221-8.
2. Sadeghi K. Evaluation of personal and social capabilities improvement in mothers participated in the maternal corporation program in Azadegan health center and comparing the results with Dastgerd health center, Isfahan 2005. [Thesis]. Isfahan: Isfahan University of Medical Sciences; 2005.
3. Asaee M. Infants feeding knowledge in Tehran. Tehran: Breastfeeding Promotion Society in corporation with World Health Organization; 1998.
4. Lakati A, Binns C, Stevenson M. Breastfeeding and the working mother in Nariobi. *Public Health Nutr* 2002;5:715-8.
5. Kimbro RT. On the job moms: Work and breastfeeding initiation and for a sample of low- income women. *Matern Child Health J* 2006;10:19-26.
6. Sheikholeslam R, Kolahdooz F, Samadpour K. Improving growth and feeding in children (Physicians training set). Tehran: UNICEF; 2004.
7. Chartoor I. Feeding and Eating disorders of infancy and early children. In: Sadock BJ, Sadock VA, editors. *Comprehensive text book of psychiatry*. 4th ed. Philadelphia: Lippincott Williams and Wilkins; 2005. p. 3217-21.
8. Golshiri P. Explanation of the effect of participation of mothers on changing their performance on child growth and feeding in the region covered by Azadegan health centers in Isfahan. [Thesis]. Isfahan: Isfahan University of Medical Sciences; 2004.
9. Lamontagen JF, Engle PL, Zeitlin MF. Maternal employment, child care, and nutritional status of 12-18 month - old children in Managua, Nicaragua. *Soc Sci Med* 1998;46:403-14.
10. Nakahara S, Poudel KC, Lopchan M, Ichikawa M, Poudel-Tandukar K, Jimba M, and etal. Availability of childcare support and nutritional status of children of non- working and working mothers in urban Nepal. *Am J Hum Biol* 2006;18:169-81.
11. Zhai F, Jin S, Ge K. Impact of maternal occupational on the dietary and nutritional status of per children. A case study in and provinces of china. *Wei sheng Yan Jin* 1999;28:47-9.
12. Toyama N, Wakia S, Nakamura Y. Mother's working status and nutritional status of children under the age of 5 in urban low-income community, Surabaya, Indonesia. *J Trop Pediatr* 2001;17 :179-81.
13. Jafarinia R. Evaluation the impact of maternal corporation program on the mothers' knowledge and participation about children nutrition development stages in Azadegan regio in Isfahan, 2005. [Thesis]. Isfahan: Isfahan University of Medical Sciences; 2006.

14. Mohammadi E. Evaluation of the maternal corporation program effects on children's feeding and growth in Azadegan health center and comparing the results with Dastgerd health center, Isfahan. [Thesis]. Isfahan: Isfahan University of Medical Sciences; 2005.
15. Labbaf Ghasemi M. Some indicators of physical growth in children in rural areas of Isfahan province. [Thesis]. Isfahan: Isfahan University of Medical Sciences; 1993.
16. Bhuiya A, Yasmin F, Begum F, Rob U. Community participation in health, family planning and development activities a review of international experiences. Dakar, Bangladesh: The population council; 1996.
17. Bakoula C, Veltsista A, Prezerakou A, Moustaki M, Fretzayas A, Nicolaidou P. Working mothers' breastfeed babies more than housewives. *Acta Paediatr* 2007;96:510-5.
18. Ortiz J, McGilligan K, Kelly P. Duration of breast milk experssion among working mothers enrolled in an emploersposored lactation program. *Pediatr Nurs* 2004;30:111-9.
19. Ryan AS, Zhou W, Arensberg MB. The effect of employment status on breastfeeding in the United States. *Womens Health Issues* 2006;16:243-51.
20. Biagioli F. Returning to work breastfeeding. *Am Fam Physician* 2003;68:2201-8.
21. Yimyam S, Morrow M. Breastfeeding practices among employed Thai women in Chiang in Chiang Mai. *J Hum Lact* 1999;15:225-32.
22. Ministry of Health and Medical Education. Image of Children Nutrition Iran Provinces in November 1998. 1st ed. Tehran: UNICEF; 1998.
23. Mc Cathy PL. The well child. In: Behrman RE, Kilegman RM, Jenson HB, editors. *Nelson text book of pediatrics*. 17th ed. Philadelphia: W.B. Saunders; 2004. p. 20-2.
24. Danesh D, Saliminia N. Group "A" Murray's Needs in 3-10 year-old children of working vs. Housewife mothers. *Iran J Psychiatry Clin Psychol* 2007;12:371-9.
25. Huston AC, Aronson SR. Mother's time with infant and time in employment as predictors of mother's child relationships and children's early development. *J Child Dev* 2005;76:467-82.
26. Gotbi F. Comparison between breastfeeding in employed and unemployed women. *Pejouhesh*, 2008;32:159-64.
27. Shams B, Golshiri P, Zamani AR, Pourabdian S. Mothers' participation in improving growth and nutrition of the children: A model for community participation. *Iran J Public Health* 2008;37:24-31.

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