



## Original article

# Evaluation of Mothers' Sociodemographic Characteristics and Infant Feeding Attitudes During Pregnancy According to the Iowa Feeding Attitude Scale and Examining the Scale's Role in Determining Breastfeeding Duration

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## ABSTRACT

**Introduction:** The World Health Organization recommends exclusive breastfeeding for the initial 6 months of life, followed by the introduction of supplementary foods together with breast milk after 6 months, and then continuing to breastfeed until the child reaches 2 years of age. Iowa Infant Feeding Attitude Scale (IIFAS) was developed to identify which infant feeding methods pregnant women are more inclined towards during the early stages of pregnancy. In our study, we aimed to assess the feeding practices of mothers using the IIFAS. **Material and methods:** The study was planned with consenting pregnant women who applied to the gynaecology clinic, pregnancy outpatient clinic and pediatric outpatient clinic of our hospital. Those who had problems such as drug use, chronic disease, psychological disorder, anatomical disorder that would prevent breastfeeding, syndromic condition, indication for hospitalisation were excluded from the study. A questionnaire regarding the demographic profile of the mothers and the IIFAS was filled out. Subsequently, face-to-face interviews were conducted with the mothers on the seventh day, third month, and sixth month to gather information.

**Results:** The study was completed with 96 mothers. According to the IOWA infant feeding scale scores of the mothers, there were 26 (27.1%) mothers in the breastfeeding-prone group with a score of 70 and above and 70 (72.9%) mothers in the undecided group with a score between 49-69. Since none of the pregnant women scored between 17-48, the group predisposed to formula feeding was not formed. There were no significant variations observed between the groups with regard to age, family type, and mode of delivery; however, there was a notable disparity in the educational and informational statuses of the mothers.

**Conclusions:** The fact that mothers were mostly undecided about the recommendations related to the IIFAS indicates the need for information about breast milk.

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# Evaluación de las características sociodemográficas de las madres y las actitudes hacia la alimentación infantil durante el embarazo según la escala de actitud hacia la alimentación de Iowa y examen del papel de la escala en la determinación de la duración de la lactancia materna

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## RESUMEN

**Introducción:** La Organización Mundial de la Salud recomienda la lactancia materna exclusiva durante los 6 meses iniciales de vida, seguida de la introducción de alimentos suplementarios junto con la leche materna a partir de los 6 meses, y luego continuar con la lactancia materna hasta que el niño cumpla los 2 años de edad. La Escala de actitud hacia la alimentación infantil de Iowa (IIFAS) se desarrolló para identificar a qué métodos de alimentación infantil se inclinan más las mujeres embarazadas durante las primeras etapas del embarazo. En nuestro estudio, nuestro objetivo fue evaluar las prácticas de alimentación de las madres utilizando el IIFAS.

**Material y métodos:** El estudio se planificó con el consentimiento de mujeres embarazadas que postularon a la consulta de ginecología, consulta externa de embarazo y consulta externa pediátrica de nuestro hospital. Fueron excluidos del estudio aquellos que presentaban problemas como consumo de drogas, enfermedad crónica, trastorno psicológico, trastorno anatómico que impediría la lactancia materna, condición sindrómica, indicación de hospitalización. Se llenó un cuestionario sobre el perfil demográfico de las madres y el IIFAS. Posteriormente, se realizaron entrevistas cara a cara con las madres los días séptimo día, tercer mes y sexto mes para recolectar información.

**Resultados:** El estudio se completó con 96 madres. Según las puntuaciones de las madres en la escala de alimentación infantil de IOWA, había 26 (27,1%) madres en el grupo propenso a amamantar con una puntuación de 70 o más y 70 (72,9%) madres en el grupo indeciso con una puntuación entre 49- 69. Dado que ninguna de las mujeres embarazadas obtuvo una puntuación entre 17 y 48, no se formó el grupo predispuesto a la alimentación con fórmula. No se observaron variaciones significativas entre los grupos con respecto a la edad, tipo de familia y modo de parto; sin embargo, hubo una disparidad notable en el estatus educativo e informativo de las madres.

**Conclusiones:** El hecho de que las madres estuvieran mayoritariamente indecisas sobre las recomendaciones relacionadas con el IIFAS indica la necesidad de información sobre la leche materna.

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## 1. INTRODUCTION

The World Health Organisation recommends exclusive breastfeeding for the first 6 months for healthy growth of babies, switching to supplementary food with breastmilk after 6 months and continuing breastfeeding until the age of 2 years [1, 2]. In the world, breastfeeding is reported at different rates. In Turkey, the rate of exclusive breastfeeding for the first 6 months in children was 42% in TDHS (Turkish Demographic and Health Survey) 2008, decreased to 30% in TDHS 2013, and was 40.7% in TDHS 2018. Although exclusive breastfeeding is recommended for the first 6 months, this situation in favour of children is unfortunately not widely implemented [3-5]. Breastfeeding rates are

affected by infant and maternal factors. In the absence of any obstacle to breastfeeding such as illness or medication use, the mother's knowledge, belief and determination to breastfeed play an important role. Identification of mothers who are at risk of discontinuing breastfeeding in the early period will be beneficial for providing breastfeeding counselling to the mother and close follow-up of the baby [6]. Scales such as the IOWA infant feeding attitude scale are used to identify risky cases.

Iowa Infant Feeding Attitude Scale (IIFAS) was developed by De La Mora and Russell to evaluate the attitudes of pregnant women towards breastfeeding and to evaluate the duration of breastfeeding with the choice of infant feeding method [7]. The rates of breastfed infants will increase

because of determining the mother's opinion about feeding her baby in the prenatal period and informing those who are averse to breastfeeding. Thus, breastfeeding will be maintained longer. In our study, we aimed to evaluate the infant feeding attitudes of mothers according to their demographic characteristics according to IIFAS.

## 2. MATERIAL AND METHODS

Our study is a prospective cross-sectional survey study and was conducted by interviewing pregnant women who applied to the Obstetrics and Gynecology Outpatient Clinic and Pediatric Outpatient Clinic of Bagcilar Training and Research Hospital between March 2019 and January 2020. Ethics committee approval was obtained from the Scientific Research Evaluation Commission of Bagcilar Training and Research Hospital before the study (dated 24/05/2019 and numbered 2019.05.2.01.045). During the study, informed consent was obtained from all pregnant women according to the Declaration of Helsinki patient rights regulation.

interviewed face-to-face at seven days, 3 months and 6 months postnatal and asked whether they breastfed exclusively or not, and if they used supplementary food other than breastmilk, the reason for this was asked. Mothers' attitudes towards breastfeeding and breast milk continuity rate were analyzed.

Expectant mothers who were in the last trimester of pregnancy, who had a singleton pregnancy, and who did not have any problems with themselves and their baby were included in the study. Those who did not complete the process during the study, infants with feeding problems and mothers of infants for whom breast milk was contraindicated were not included in the study.

### 2.1. STATISTICAL ANALYSIS

In this study, statistical analyses were performed with NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA) package programme. In the evaluation of the data, descriptive statistical methods (mean, standard deviation, median, interquartile range) as

<b>Table 1: The IOWA Infant Feeding Scale</b>
The benefits of breast milk continue until the baby is weaned from breast milk (R).
Formula feeding is more appropriate than breast milk (R).
Breastfeeding increases the bond between mother and baby.
Breast milk is poor in iron (R).
Obesity is more common in formula-fed babies.
When the mother starts working, formula feeding is a better choice (R).
Mothers who feed their babies with formula are deprived of breastfeeding, which is the greatest pleasure of motherhood.
Mothers should not breastfeed their babies in public places (R).
Breastfed babies are healthier than formula-fed babies are.
Obesity is more common in breastfed babies (R).
If the mother is breastfeeding, the father feels lonely (R).
Breast milk is the ideal food for babies.
Breast milk is digested better than formula.
Formula is as healthy for the baby as breast milk (R).
Breast milk is more suitable than formula.
Breast milk is cheaper than formula.
If the mother drinks alcohol, she should not breastfeed her baby (R).

*R: Reverse scored questions.*

Pregnant women who applied to the pregnancy and pediatric outpatient clinic in the antenatal period were asked to answer 17 questions in the IOWA infant feeding attitude scale validated in Turkish by Eksioğlu et al. [8] (Table 1). In addition, a case report form was prepared to record the demographic characteristics of the mothers. The questionnaires were completed by face-to-face interviews with the expectant mothers. If the expectant mother scored between 70-85, she was grouped as predisposed to breastfeeding, if she scored between 49-69, she was undecided, and if she scored between 17-48, she was grouped as predisposed to formula feeding. Mothers were

well as Shapiro-Wilk normality test were used. One-way analysis of variance, Tukey's multiple comparison test in subgroup comparisons, independent t test in pairwise group comparisons, Kruskal Wallis test, Dunn's multiple comparison test in subgroup comparisons, Mann Whitney U test in pairwise group comparisons, chi-square test in comparisons of qualitative data were used in intergroup comparisons of variables with normal distribution. The Pearson correlation test was used to determine the relationship between variables and each other, and linear correlation test was used to determine the effective factors. The results were evaluated at a significance level of

p<0.05.

### 3. RESULTS

In our study, which aimed to evaluate the infant feeding attitudes of expectant mothers according to the IOWA scale, 96 pregnant women who gave consent from pregnant women in the last trimester who applied to the obstetrics and gynaecology outpatient clinic and pediatric outpatient clinic of our hospital participated. The age distribution of the pregnant women who participated in our study was between 19 and 40 years. The mean age of the pregnant women was 30.4 years.

scored between 17-48 points, the group predisposed to formula feeding was not formed.

Mothers in the undecided group with only literacy or primary school qualifications had a statistically significant higher prevalence than the group predisposed to breastfeeding. In other words, the undecided group had a lower education level. There was no statistically significant distinction between the two groups regarding high school and university education. The number of unemployed mothers in the undecided group was found to be statistically significantly higher than the number of unemployed mothers in the breastfeeding-prone group in terms of employment.

The undecided group, who did not receive information

**Table 2: Sociodemographic Characteristics of the Breastfeeding Predisposed and Breastfeeding Undecided Groups According to the Iowa Infant Feeding Scale-1**

IOWA	Breastfeeding undecided group n=70 (%)	Breastfeeding predisposed n=26 (%)	P-value
Mother education	Literate only	0 (0,00)	0,001
	Primary education	4 (15,38)	
	High School	6 (23,08)	
	University	16 (61,54)	
Employment status of the mother	No	10 (38,46)	0,016
	Yes	16 (61,54)	
Planned pregnancy	No	6 (23,08)	0,862
	Yes	20 (79,62)	
Getting information from the health institution	No	5 (19,23)	0,001
	Yes	21 (80,77)	
Getting information from the family	No	216 (61,54)	0,018
	Yes	10 (38,46)	
Getting information from the neighbours	No	25 (96,15)	0,714
	Yes	1 (3,85)	
Getting information from the internet-television	No	14 (53,85)	0,350
	Yes	12 (46,15)	
No information	No	25 (96,15)	0,0001
	Yes	1 (3,85)	
Naturally/in vitro fertilization	Naturally	25 (96,15)	0,714
	In vitro	1 (3,85)	
Family type	Large family	3 (11,54)	0,270
	Nuclear family	23 (88,46)	
Baby delivery type	NSVD	12 (46,15)	0,969
	C/S	14 (53,85)	
Gender	Female	16 (61,54)	0,804
	Male	10 (38,46)	
Postpartum employment status	No	11 (42,31)	
	Yes	15 (57,69)	

NSVD: Normal spontaneous vaginal delivery; C/S: Caesarean section

When the total scores of the pregnant women were grouped according to their responses on the IOWA infant feeding scale, 70 (72.9%) of the pregnant women scored between 49-69 points and were in the undecided group, and 26 (27.1%) of the pregnant women scored 70 or more points and were in the group predisposed to breastfeeding. Since none of the pregnant women who participated in our study

about breastfeeding during pregnancy from health workers and/or family members, was found to be statistically significantly higher than the group predisposed to breastfeeding. In our total group, 30 people reported that they did not receive information about breastfeeding from any source. Of these, 96.6% were in the undecided group. There was a significant difference between the two groups

in terms of obtaining information. Other sociodemographic characteristics of the undecided and predisposed groups to breastfeeding were summarised in Table 2 and Table 3. While 19 out of 26 mothers (73.08%) from the breastfeeding-inclined group were exclusively breastfeeding their infants six months post-partum, 50 out of 70 mothers (71.43%) from the undecided group reported exclusively breastfeeding at six months. There was no statistical significance between the two groups in terms of exclusive breastfeeding at six months (p=0.669). In Table 4 of the IOWA infant feeding scale, the feeding patterns of infants in the groups inclined towards breastfeeding and those who were undecided are presented for the first week, third month and sixth month.

health status. Therefore, it is important to determine the infant feeding beliefs and attitudes of mothers.

According to the IOWA infant feeding scale scores we used in our study, there were 26 (27.1%) mothers in the group predisposed to breastfeeding with a score of 70 and above and 70 (72.9%) mothers in the undecided group with a score between 49-69. Since none of the pregnant women scored between 17-48, the group predisposed to formula feeding was not formed. In the Iowa Infant Feeding Scale conducted by Sittlington et al. In Northern Ireland in pregnant women at 8-12 gestation weeks, 42.7% of the mothers intended to breastfeed and 32.3% decided to formula feed. On the other hand, the remaining 25% were undecided about what to feed. However, when they were

**Table 3: Sociodemographic Characteristics of Breastfeeding Prone and Breastfeeding Undecided Groups According to Iowa Infant Feeding Scale-2**

Variable	Breastfeeding undecided group n=70	Breastfeeding predisposed n=26	P-value
The age of pregnant women	30,01±5,3	30,46±5,33	0,714
Start of mothers' employment (in months)	6,38±2,46	6,37±2,88	0,923
Number of children	2,39±1,28	1,85±0,97	0,071
Number of pregnancies	2,76±1,68	2,08±1,29	0,065
Week of gestation at the time of the survey	29,49±9,58	28,85±9,4	0,771

#### 4. DISCUSSION

It has been reported that breastmilk, for which a new benefit is found every passing day, is not given at the desired rate in practice and breastfeeding rates are below the targeted rates in many regions of the world and WHO aims to increase exclusive breastmilk use to 50% in the first 6 months for 2025 [2]. The decision of mothers to breastfeed is the first of the decisions taken regarding the nutrition of children and has a permanent effect on their

discharged from the hospital, 40.1% were exclusively breastfed, 59.9% were exclusively formula fed, and a small part of the undecided group was discharged with breastfeeding [9]. The fact that the undecided group mostly preferred formula feeding during discharge shows how important the attitude of the mother is in the prenatal period. The fact that the undecided group was higher in our study shows that mothers in our country are not educated well enough about infant nutrition and its importance during pregnancy. In our study, no statistically significant difference was found regarding pregnancy planning and age of the mothers. It was thought that this might be due to

**Table 4: Distribution of infant nutrition at one week, three months and six months of age**

Variable	Breastfeeding undecided group n=70	Breastfeeding predisposed n=26	P-value
1 <sup>st</sup> week	Only Breastfeeding	55 (78,57)	0,500
	Only formula	1 (1,43)	
	Breastfeeding + Formula	14 (20,00)	
3 <sup>rd</sup> month	Only Breastfeeding	55 (78,57)	0,128
	Only formula	2 (2,86)	
	Breastfeeding + Formula	13 (18,57)	
6 <sup>th</sup> month	Only Breastfeeding	50 (71,43)	0,669
	Only formula	6 (8,57)	
	Breastfeeding + Formula	10 (14,29)	
	Complementary feeding + Formula	0 (0,00)	
	Complementary feeding + Breastfeeding	3 (4,29)	
Complementary feeding	1 (1,43)	0 (0,00)	

the small number of patients or the fact that it was a single-centre study. In the IOWA infant feeding attitude scale applied by Kucukoglu et al. to mothers of infants hospitalised in neonatal intensive care, the mean score was 65.5 and it was found that mothers with high scores were mostly mothers with planned pregnancies [10]. Lau et al. found the IOWA score higher in mothers who were older and had planned pregnancies in 417 pregnant women in Singapore [11]. Studies suggest that having a planned pregnancy and the mother feeling ready for pregnancy and the child have a positive effect on breastfeeding [11, 12]. In our study, when the mothers were grouped according to their demographic characteristics, there were no significant differences in age, family type, mode of delivery, occupation and family structure, whereas significant differences were found between the educational status, employment status and the informational status of the mothers. When we looked at the educational status of the mothers, 1/3 were university graduates and 1/3 were primary school graduates. When we compared the groups, half of the university graduates were predisposed to breastfeeding, while the others were mostly undecided. As the level of education increased, they were in favour of breastfeeding. In the study conducted by Kızıltepe, 311 (92.2%) of the pregnant women scored between 49-69 points and were in the undecided group, while 26 (7.8%) of the pregnant women scored 70 and above and were in the breastfeeding-prone group. Education level and employment status were found to be statistically significantly higher in the group predisposed to breastfeeding [13]. These results suggest that people with higher educational level have more knowledge about breastfeeding and get information from sources that are more reliable.

In our study, the rate of receiving information about breastmilk in the breastfeeding-prone group was found to be significantly higher than the undecided group. In our total group, 30 people reported that they did not receive any information about breast milk from any source. Of these, 96.6% were in the undecided group. Studies have shown that breastfeeding education and counselling services significantly increase the initiation and maintenance of breastfeeding and significantly decrease the use of pacifiers and feeding bottles [14, 15]. In the study conducted by Sarki et al. it was found that informing about breastfeeding, especially by healthcare professionals, contributed positively [16]. Health professionals have important duties to raise awareness of mothers with prenatal and postnatal education programmes [15].

When the employment status of the mothers was evaluated in our study, it was observed that the non-working mothers

were mostly in the undecided group, while the working mothers were in the group close to breastfeeding. No significant difference was observed between the two groups in terms of the time of starting work after the birth. When the first week, third month and sixth month feeding status were compared, no significant difference was found between working and non-working mothers in terms of breast milk use. In the study conducted by Hernández-Cordero, it was observed that working mothers had more information about breast milk compared to non-working mothers, but despite this, the rate of exclusive breast milk feeding for the first 6 months was low and the habit of using pacifier/bottle was higher [17]. In the study conducted by Aytekin et al., working mothers were found to be statistically significantly higher in the direction of breast milk as the first food given to the baby. Giving additional food to the baby in the first three days after birth (water or sugar water) was found to be significantly higher in non-working mothers [18]. We observe that working mothers are more prone to breastfeeding in the prenatal period compared to non-working mothers, but cannot maintain this decision in the postnatal period. It is thought that the separation of the mother from her baby when she starts to work causes a decrease in breast milk and early termination of breastfeeding. This result reveals that postnatal leave and milk leave periods are inadequate and distract the mother from breastfeeding [19].

In addition to the medical reasons of the mother and the baby, the social status, educational level, breastfeeding experience, working conditions, psychological status, knowledge about breastfeeding, especially the belief about breastmilk and breastfeeding, as well as the opinions of the baby's father, family members and the social environment around the baby about breastmilk and the mother's willingness to breastfeed the baby significantly affect breastfeeding and its duration [9, 10, 20, 21]. In our study, the fact that mothers with lower education level were more in the undecided group shows the effect of being educated on the breastfeeding process. In this case, it is important to update the knowledge of not only mothers and the community but also healthcare professionals and to ensure that there is consensus about the benefits of breastmilk. During pregnancy follow-ups in the prenatal period, the mother's knowledge about breast milk, breastfeeding intention and anxiety should be determined and trainings should be provided accordingly. These trainings should start in the prenatal period and continue in the postnatal period. Our study has some limitations; when we look at the breastfeeding rates on the seventh day, at the third month and at the sixth month, the relatively small number of cases

and the single-centre nature of our study may explain the lack of a significant difference between the undecided and the predisposed group. On the other hand, it is possible that the higher breastfeeding rates in both groups compared to our country's data are related to the educational influence of health professionals in a tertiary hospital, which is a positive development in terms of child health protection and improvement.

## 5. DISCUSSION

The significance of nutritious breast milk for promoting healthy generations is self-evident. Assessing maternal dietary habits during pregnancy and offering essential education in this regard represents a crucial investment in child health care. Further research is required to create a well-informed approach on this topic.

## 6. CONFLICT OF INTERESTS

The authors have no conflict of interest to declare. The authors declared that this study has received no financial support.

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