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Evaluating the Effect of Telephone Counseling during the Postpartum Period on Exclusive Breastfeeding

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Abstract

Background

The most common type of feeding for infants is breastfeeding. Since breastfeeding mothers have low levels of breastfeeding knowledge, proper Health workers' support can play an effective role in raising mother's awareness and enhancing exclusive nutrition. This study aimed to evaluate the effect of telephone counseling during the postpartum period on exclusive breastfeeding.

Materials and Methods: This quasi-experimental study was conducted on 170 breastfed women referred to the 2 selected health centers of Mazandaran University of Medical Sciences in 2018. The participants were randomly allocated into two equal groups (75 individuals each). The participants in the intervention group received telephone counseling by one midwifery expert. The control group received routine care. Data were collected using a questionnaire including demographic characteristics and a breastfeeding check-list. Exclusive breastfeeding rates were recorded two and six months after childbirth in both groups. Data were analyzed using SPSS software version 24.0.

Results: A total of 165 mothers participants in this study. Based on the results, exclusive breastfeeding rate was 61% in treatment group and 39.8% in control group which was statistically significant (p=0.006). In addition, 24 neonates (28.9%) of the newborns in the control group and 19 (23.2%) in the intervention group were fed to the breastfeeding. This difference was statistically significant and indicates that the intervention Telephone counseling in postpartum period has a positive effect on exclusive breastfeeding (p = 0.027).

Conclusion

Based on the results, using a counseling program in this study led to an increase in exclusive breastfeeding in newborns. Pre and postpartum and lactation care for both mother and infant can increase health and exclusive breastfeeding.

Key Words: Exclusive Breastfeeding, Telephone counseling, Postpartum.

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1- INTRODUCTION

It is widely accepted that the first 2 years of a child's life are particularly important, as optimal nutrition during this period lowers morbidity and mortality (1-5), in a way that if all children under two years of age are optimally breastfed, death of over 82,000,000 infants under 5 years of age is prevented each year (6). In addition to supplying all the nutrients a baby needs, breastfeeding protects the child from two important causes of child death in the world (i.e., pneumonia and diarrhea) (7). Breastfeeding also helps maintain the mental health of children and the bonding between mother and child (9-11). Moreover, breastfeeding is an important factor for decreased obesity during adolescence and adulthood and diseases such as diabetes. Furthermore, it is associated with a higher IQ (7). In this regard, exclusive breastfeeding during the first six months of life is an important recommendation of the world health organization (WHO) in order to achieve favorable growth, development, and health in children (12).

Statistics show that only about 36% of infants below six months of age were exclusively breastfed during 2007-2014 (1), and one of the important goals of WHO is increasing this rate to 50% by 2025 (13). In Iran, the rate of exclusive breastfeeding increased from 44.1 to 53.1% during 2000-2010 (14). In a systematic review, Kavle et al. (2017) evaluated the causes of failure of exclusive breastfeeding, considering factors such as lack of participation of mothers in prenatal care, inadequate maternal knowledge about exclusive breastfeeding, type of maternal attitude, cesarean section, delay in breastfeeding, starting feeding with materials other than breast milk, maternal occupation, poor understanding of infant feeding behaviors, thinking of breast milk inadequacy, breast problems, and lack of adequate support from family and community being involved in this regard (13). In order to improve the level of breastfeeding, postpartum breastfeeding support can be provided through in-home visits, telephone counseling and support and referring to breastfeeding centers, which have positive maternal and neonatal outcomes (15, 16). In this respect, several studies have found a positive relationship between breastfeeding counseling and successful exclusive breastfeeding in the first six months of an infant's life (17-20). Meanwhile, telephone counseling is recognized as a well-known strategy for providing counseling services to mothers (21). The purpose of telephone counseling is to improve pregnancy outcomes through nutrition education and family support to ensure child safety and proper nutrition, provide environmental incentives, achieve maximum child health and development, and establish communication between family members and health care providers, and other services required (22). Case studies performed during 2005-2015 were indicative of the increased level of exclusive breastfeeding in groups receiving telephone counseling, compared to control groups that only received the standard care (23-25). Other cross-sectional studies have found similar results (26-29). Nonetheless, given the fact that only one study related to this topic has been conducted in Iran in 2010 and no research has been performed in the North of Iran, we aimed to evaluate the effect of telephone counseling during the Postpartum Period on exclusive breastfeeding.

2- MATERIALS AND METHODS

2-1. Research Design and Population

This was a quasi-study conducted from Feb 2018 to Aug 2018 in the two healthcare centers in Mazandaran University of Medical Sciences, Sari, Iran. A total of 170 Mothers in two groups (Intervention & Control) were selected in

order to evaluate the effect of telephone counseling on exclusive breastfeeding. A researcher-made checklist was used for examining the breastfeeding performance and five sessions of breastfeeding consultation were held for the intervention group.

2-2. Method

The aim of this quasi-study was to determine the effects of telephone counseling on exclusive breastfeeding. In this study, the participants included breastfed mothers who brought their infants to health centers in Sari, Iran on the third or fifth postpartum day for care and screening for hypothyroidism. The subjects were selected based on the inclusion criteria and after recording their information in a data collection form. First, the research objectives were explained to the participants and a consent was obtained prior to the research; then their information including phone number was recorded in data collection form.

In this study, a researcher-made tool was used for examining the breastfeeding performance and continuation and duration of exclusive breastfeeding. Content validity was used to determine the validity of data collection tool. Thus, after conducting library studies and reviewing the literature, a questionnaire was prepared, and distributed to five faculty members of the School of Nursing and Midwifery. Re-test was used to determine the reliability of the tool. Questionnaires were completed by 15 breastfeeding women in two stages (2 weeks apart) who had the characteristics of the research sample (ICC= 0.78). In addition, internal consistency of questions was determined by calculating (r=0.73). The breast-fed mothers were randomly assigned into intervention (n=85) or control group (n=85). Research team had no contact with the subjects in the control group and they only received postpartum care from the health centers. While, subjects in the intervention group received telephone counseling, in addition to the routine postpartum care from the centers. The first telephone counseling was within 24 hours after healthcare discharge. Next, telephone contacts took place 2 times in the first month and once in months 2 and 4, respectively. Each counseling session took about 20 minutes. Counselor was a midwifery Master of Science student with special short-term training in postpartum care. The subjects in intervention group could also contact the counselor by telephone. An assistant, blind to the group assignment, collected the final data about child nutrition of two groups after intervention at the healthcare center. Contents of the telephone counseling was conducted based on national, WHO (2009), and other valid organizations' guidelines. Each counseling session had two parts: first, the counselor asked the mother about their problems experienced during the previous week and would note them down in the checklist. Then counseling was done about the problems. The second part of the counseling was conducted about support of exclusive breastfeeding. Consultation with other persons like relatives of the mother or referring to specialty centers was given, if necessary.

2-3. Sample Size

The proper sample size was estimated at a minimum of 77 individuals per group by assessing the difference in the ratio of the desired indexes in two intervention and control groups considering a 95% confidence interval (CI), and 80% test power in cases where the minimum distance between the two groups was 20%. However, considering a 10% attrition, the final sample size was estimated at 85 cases per group. To reach the desired sample size, 170 eligible mothers who referred to two selected healthcare centers during the third-fifth postpartum days for testing their infants in terms of hypothyroidism were

selected sequentially after receiving informed consent from the participants. In end, the subjects were divided into two groups by random allocation of codes from 1 to 170 to the individuals, and 85 subjects were assigned to each intervention and control group. Mothers were homogenized in terms of pregnancy order. During the research, two subjects were excluded from the control group at the second and fourth weeks due to unwillingness to cooperate with the research and three participants were removed from the intervention group (two individuals due to lack of desire to participate in the research and one person due to travel) at the sixth week. Therefore, the research ended with 83 and 82 individuals in the control and intervention groups, respectively (**Figure.1**).

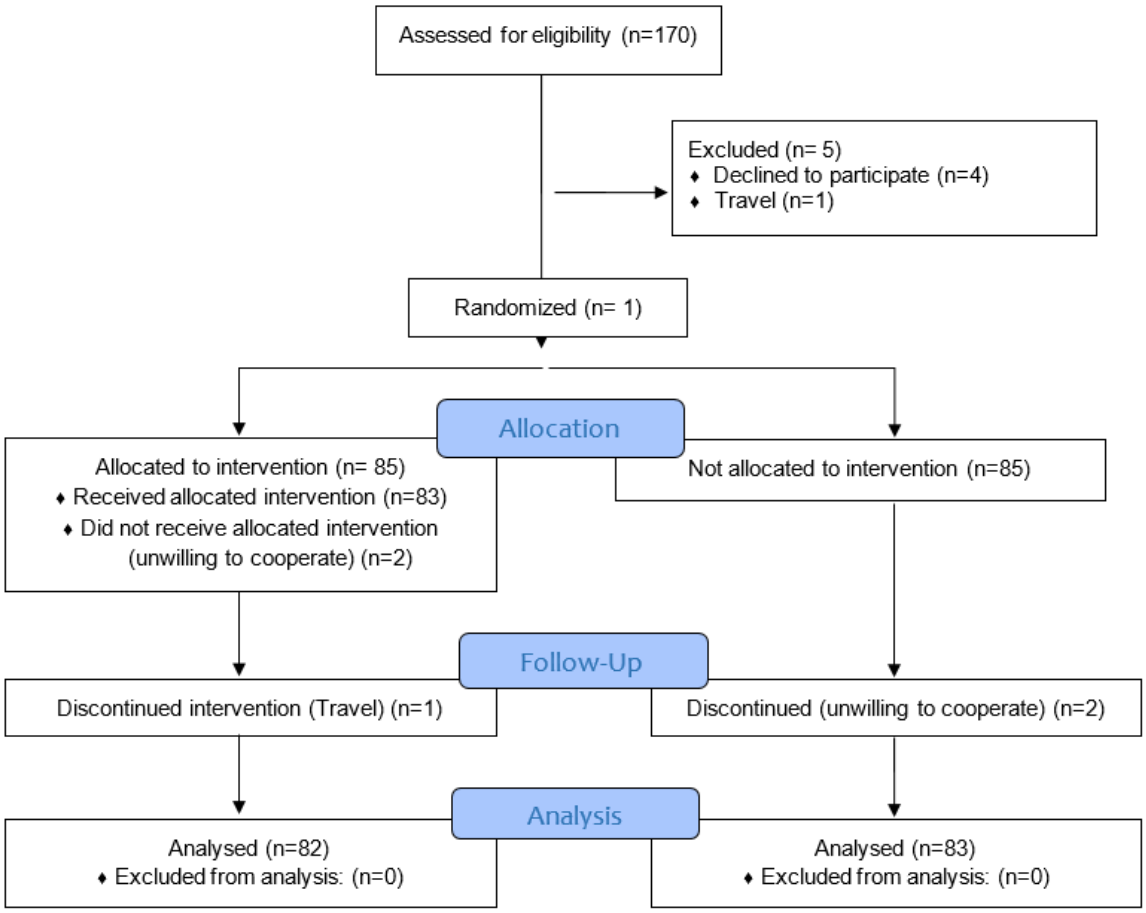

Fig1: Flowchart of different stages of study.

2-4. Inclusion Criteria

Inclusion criteria included having Iranian nationality; being resident of Sarin; education more than six years; willing to have exclusive breastfeeding; giving birth to a single healthy baby with Apgar score of 7 or more in the fifth minute; easy access by telephone; no problem in speech and hearing; lack of underlying diseases, singleton fetuses with normal weight at birth without a congenital anomaly, lack of use of narcotics and medications contraindicated in lactation, and first or second order of pregnancy; not being smoker or drug user and no history of stillbirth or child death.

2-5. Exclusion Criteria

Exclusion criteria included unwillingness to cooperate with the research for any

reason and migrating from the studied region.

2-6. Ethical Consideration

This study was carried out after obtaining confirmation from the MAZUMS's Ethics Committee with ID-code: IR.MAZUMS.REC.1398.866.

2-7. Statistical Method

Data analysis was performed in SPSS software version 24.0 using descriptive statistics and central and dispersion indices to report some demographic information quantitatively (age, number of children and weight at birth), and qualitatively (occupational status, level of education, history of drug abuse and narcotics use and variables related to pregnancy and care carried out by mothers). In addition, descriptive statistics were applied for qualitative variables with frequency and percentage and quantitative variables with mean and standard deviation. Furthermore, inferential statistics were used for qualitative variables (Chi-square), and comparison of quantitative variables (independent t-test or its non-parametric equivalent known as Mann-Whitney U). Also, Kolmogorov-Smirnov test was carried out for evaluation of normality of the variables. Notably, a P-value of less than 0.05 was considered statistically significant. The level of $P<0.05$ was considered.

3- RESULTS

The present study was performed on 165 mothers referred to healthcare centers affiliated to Mazandaran University of Medical Sciences, who were divided into two control (n=83), and intervention (n=82) groups to determine the effect of telephone counseling on exclusive breastfeeding. The age range of mothers was 19-39 years (30.90±4.20), and neonatal weight at birth was 1910-4500 gr (3367.6±411.3). According to **Table.1**, there was no significant difference between the groups in terms of maternal age and weight at birth. In addition, evaluation of the parental demographic variables was indicative of a uniform distribution of the variables and lack of a significant difference in this regard. According to **Table.2**, no significant difference was observed between the intervention and control groups in terms of variables related to pregnancy and childbirth history of mothers and care provided to these individuals. Distribution of neonatal feeding in the control and intervention groups are shown in **Figure.2**.

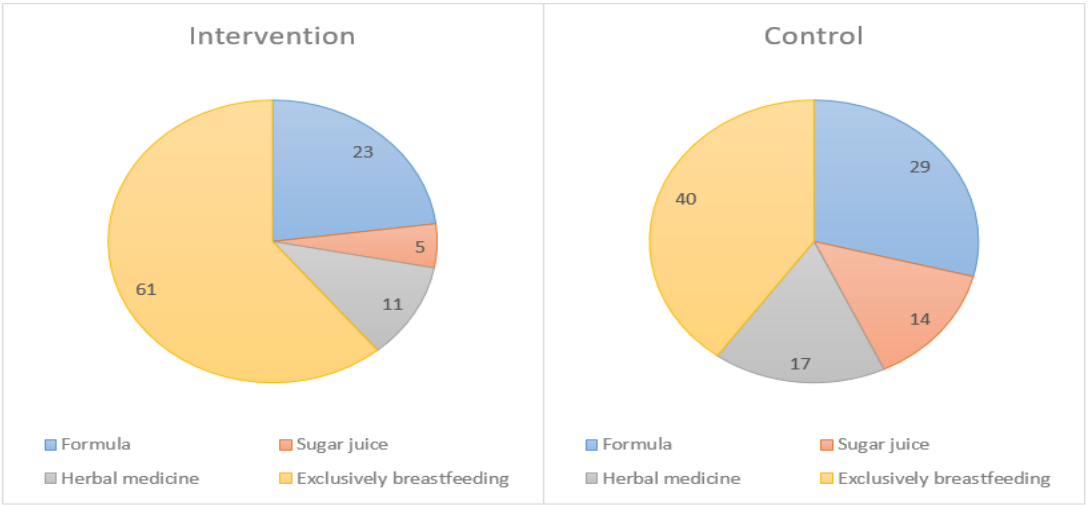

Fig.2: Distribution of neonatal feeding in the control and intervention groups (percentage).

Table-1: Baseline characteristics of parents in two groups of control and intervention (n=165).

Variables			Control, (83)	Intervention, (82)	Total, (165)	P-value
			Mean ± SD	Mean ± SD	Mean ± SD	
Age of mothers (Year)			30.99±4.05	30.80±4.38	19-39 (30.90±4.20)	0.940
Birth weight of neonate (g)			3383.01±465.63	3351.89±349.96	1910-4500 3367.6±411.3	0.339
Variables			Number (%)	Number (%)	Number (%)	
Job	Mother	Housewife	72(86.7)	62(75.6)	134(81.2)	0.067
		Employed	11(13.3)	20(24.4)	31(18.8)	
	Father	Unemployed	5(6.0)	7(8.5)	12(7.3)	0.534
		Employed	87(94.0)	75(91.5)	153(92.7)	
Education Level	Mother	Illiterate	2(2.4)	3(3.7)	5(3.0)	0.896
		Less than diploma	33(39.8)	32(39.0)	65(39.4)	
		Diploma and higher	48(57.8)	47(57.3)	95(57.6)	
	Father	Illiterate	(1.2)	0	1(0.6)	0.292
		Less than diploma	12(14.5)	18(22.0)	30(18.2)	
		Diploma and higher	70(84.3)	64(78.9)	134(81.2)	
Drug user		Yes	1(1.2)	2(2.4)	3(1.8)	0.553
		No	82(98.8)	80(97.6)	162(98.2)	
Taking Medication		Yes	1(2.4)	0	2(1.2)	0.157
		No	81(97.6)	82(100.0)	163(98.8)	

Table-2: Variables related to maternal pregnancy and delivery records in the two groups of control and intervention (n=165).

Variables		Control, (83)	Intervention, (82)	Total, (165)	P-value
Gravidity	First	14(16.9%)	18(22.0%)	32(19.4%)	0.458
	Second	66(79.5%)	63(76.8%)	129(78.2%)	
	Third and higher	3(3.6%)	1(1.2%)	4(2.4%)	
Parity	First	17(20.5%)	18(22.0%)	35(21.2%)	0.817
	Second	66(79.5%)	64(78.0%)	130(78.8%)	
Type of delivery	Vaginal	33(39.8%)	45(54.9%)	78(47.3%)	0.052
	Cesarean	50(60.2%)	37(45.1%)	87(52.7%)	
History of abortion	Yes	4(4.8%)	2(2.5%)	6(3.6%)	0.128
	No	79(95.2%)	80(97.5%)	159(96.4%)	
Neonatal gender	Girl	34(41.0%)	36(43.9%)	70(42.4%)	0.703
	Boy	49(59.0%)	46(56.1%)	95(57.6%)	
Satisfaction with neonatal gender	Yes	73(88.0%)	74(90.2%)	147(89.1%)	0.637
	No	10(12.0%)	8(9.8%)	18(10.9%)	
Tendency to pregnancy	Yes	76(91.6%)	79(96.3%)	155(93.9%)	0.199
	No	7(8.4%)	3(3.7%)	10(6.1%)	
Maternal care	Yes	80(96.4%)	82(100.0%)	162(98.2%)	0.082
	No	3(3.6%)	0(0.0%)	3(1.8%)	
Refer for Prenatal Care	Regular	72(86%)	75(91.5%)	145(89.5%)	0.331
	Irregular	11(13.3%)	7(8.5%)	17(10.5%)	
Prenatal Care Place	Health Care Center	78(94.0%)	81(98.8%)	159(96.4%)	0.099
	Health Care House	5(6.0%)	1(1.2%)	6(3.6%)	

As shown in **Table.3**, 83 neonates (50.3%) were exclusively breastfed, 33 (39.8%) and 50 (61%) of whom were in the control and intervention groups, respectively. In addition, 24 (28.9%), and 19 (23.2%) infants in the control and intervention groups, respectively, were fed with formula in addition to breast milk. Furthermore, 14 (16.9%), and 9 (11%) individuals in the control and intervention groups used herbal drugs, respectively, which showed a significant difference in this regard (P=0.027). According to **Table.4**, the frequency of exclusive breastfeeding was significantly higher in the intervention group, compared to the control group (61% vs. 39.8%, P=0.006).

Table-3: Type of nutrition between control and intervention groups (n=165).

Variables		Control Number (%)	Intervention Number (%)	Total Number (%)	P-value
Type of nutrition	Exclusively breastfeeding	33(39.8)	50(61.0)	83(50.3%)	0.027
	Sugar water	12(14.5%)	4(4.9%)	16(9.7%)	
	Herbal Medicines	14(16.9%)	9(11.0%)	23(13.9%)	
	Formula	24(28.9%)	19(23.2%)	43(26.1%)	

Formula: milk powder.

Table-4: Comparison of exclusive breastfeeding between the intervention and control groups.

Variables		Control Number (%)	Intervention Number (%)	Total Number (%)
Exclusively breastfeeding	Yes	33 (39.8)	50 (61)	0.006
	No	50(60.2)	32(39)	

4- DISCUSSION

The present research was a quasi-study conducted to determine the effect of support via telephone counseling on postpartum exclusive breastfeeding at healthcare centers affiliated to Mazandaran University of Medical Sciences. According to the results, the intervention carried out through telephone counseling during the postpartum period had an effect on exclusive breastfeeding of infants (P=0.027). The role of education and breastfeeding counseling on the improvement of breastfeeding has been assessed in various studies. For instance, Almasi et al. considered breastfeeding education and its continuation as the most important factor for exclusive breastfeeding (30). In addition, Memmott et al. concluded that self-confidence, and maintaining and continuing breastfeeding of mothers were related to the positive effects of breastfeeding counseling and skills of counselors (31). However, Allison et al. reported contradictory results since the level of exclusive breastfeeding was higher in the group that only received the standard care, compared to those who received breastfeeding education in addition to the standard care program (32). Breastfeeding counseling is often carried out by mothers with successful breastfeeding experience in a way that intervention through supporting breastfeeding by those who had successful breastfeeding experience led to positive effects on breastfeeding patterns and

duration (33). Over the past few years, breastfeeding counseling has been included in maternal care programs provided by the ministry of health and medical education. In a research, Ayton et al. concluded that integrating breastfeeding counseling with other maternal and neonatal care, such as vaccination, was not appropriate since other care procedures are time-consuming, which could reduce the time for breastfeeding counseling (34).

In a study, Jang et al. provided telephone counseling for mothers once a week for four weeks and then once a month for 16 weeks (eight times) to recognize and solve breastfeeding problems of the participants (22). In their research, Meedya et al. provided breastfeeding education from the beginning of the second pregnancy trimester in the form of three educational classes, following the training by in-home visits after the birth of neonates. In addition, they provided telephone counseling along with these teachings (24).

In a study, Anderson et al. evaluated low-income mothers residing in the Latin urban community (case group), using in-person education (three times before birth, daily during the prenatal period, and nine times after birth) along with telephone counseling, if required (25). Also, Tavafian et al. evaluated the effect of education and educational support, creating a positive maternal attitude toward breastfeeding through phone calls during four postpartum months. In the end, it was concluded that the level of exclusive breastfeeding was significantly (64.2%) higher, compared to the control group (29.8%) (35). It is notable that all four studies (22, 24, 25, 35) mentioned had similar research designs (case and control groups) while having different types of intervention (a higher number of in-person and phone contacts and evaluation of the level of exclusive breastfeeding for a longer period after childbirth). Nonetheless, the results are in line with our findings since breastfeeding prevalence (22, 24), and exclusive breastfeeding (25, 35) were higher in the case group, compared to the control group. Consistent with our findings, Meglio et al. reported a higher level of exclusive breastfeeding in the counseling group, compared to the control group (23). In a study, Dehkordi et al. evaluated the effect of phone counseling on the duration of exclusive breastfeeding, especially in primipara mothers (27). However, no significant difference was observed between the control and intervention groups in the current research, which might be due to differences in basic knowledge of mothers, especially primipara mothers, given the increased amount of information resources from the time of that study.

In another study, Gholamitabar Tabari et al. used other information resources (e.g., movies and books on breastfeeding) in addition to telephone counseling during pregnancy to four months after childbirth to teach mothers. In the end, the level of breastfeeding was higher in the intervention group, compared to the control group (36). In addition to telephone counseling, Lee evaluated the effect of websites on the increase of breastfeeding (28).

Moreover, Friesen et al. used a video conference to transfer information to mothers, concluding that breastfeeding counseling with this approach not only increased the knowledge level and self-confidence of mothers but also decreased their anxiety (37). Furthermore, Gallegos et al. evaluated information provision through text messages and found an increase in the duration of exclusive breastfeeding among the participants (38). However, some mothers might not have access to the mentioned technologies and might lack the required skills to deal with them. Therefore, given the ever-expanding technology and the need to use it in everyday life, its use by mothers is

inevitable and future studies must apply the technology in their design as an intervention. The following recommendations are suggested:

- Establishing a hotline for counseling and educating mothers and answering their questions and concerns.
- Holding a training course for experts on how to implement a telephone counseling program.
- Conducting studies on all forms of breastfeeding support, especially in other cities and countries while considering the differences in cultural, ethnic and social characteristics over a longer period.
- Performing research on ways to provide child nutrition support and counseling.

5- CONCLUSION

Nowadays, it is important to provide easy and inexpensive consulting methods for increasing exclusive breastfeeding. Based on the results, Telephone counseling improves the continuation of exclusive breastfeeding, increases the number of breastfeeding sessions, and reduces the use of solution of sugar and water and herbal medicines instead of breastfeeding. Given the importance of exclusive breastfeeding and problems associated with recurrent referrals and lack of maternal access to physicians and nurses at the time of need and, with regard to our findings, the telephone is a suitable alternative to establish constant and dynamic communication between mothers and healthcare providers and to receive counseling.

6- CONFLICT OF INTEREST: None.

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