The Effect of Cradle Cap Care Education Given to Mothers with 0-12 Months Infants on Mothers' Knowledge Levels*

Tilbe ROKOP**, Beste ÖZGÜVEN ÖZTORNACI***

Abstract

Aim: The aim of this study was to investigate the effect of cradle cap care education given to mothers with 0-12 months old infants on their knowledge levels. This age range (0-12 months) was selected because it is the period when the barrier functions of a baby's skin are most fragile.

Method: This study was quasi-experimental designed and conducted between April 2023 and July 2023 with 33 mothers of infants aged 0-12 months enrolled in a family health centre. "Cradle Cap Care in Infants" education programme prepared by the researchers was applied to the mothers. The data were collected three times: before, two weeks after, and two months after the education with the "Mother-Infant Sociodemographic Characteristics Form" and "Maternal Knowledge Assessment Form for Cradle Cap Care in Infants". Correlation and one-way analysis of variance (ANOVA) were used to evaluate the relationships between mothers' knowledge scores and maternal age and educational status. Analysis of variance for repeated measures and independent samples t-test were used to determine the differences between knowledge scores obtained from pre- and post-education tests.

Results: The maximum score that can be obtained from the 'Maternal Knowledge Assessment Form for Cradle Cap Care in Infants' is 18. The mean score of the test performed before the education was 6.73, the mean score of the test performed in the second week after the education was 10.15, and the mean score of the test performed in the second month after the education was 10.00. Accordingly, a significant difference was found between the pre- education test score and the knowledge level scores obtained from the tests after the education given to the mothers ($p<0.05$). No statistically significant difference was found between the knowledge scores obtained two weeks and two months after the education, indicating the maintenance of knowledge over time. It was observed that the age and education level of mothers did not create a significant difference in pre-test knowledge scores. It has been determined that the majority of mothers correctly perform some basic practices related to infant cradle cap care. However, the rate of incorrect answers is high for some questions. Most incorrectly answered statements are related to cultural habits and information passed down from previous generations.

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** MSc, RN., Ankara Etlik City Hospital, Pediatric Department, Ankara, Türkiye. E-mail: tilbebursalii@gmail.com ORCID https://orcid.org/0000-0003-2414-9654

*** PhD, RN., Asst. Prof., Izmir Kâtip Çelebi University, Faculty of Health Sciences, Department of Nursing, Department of Paediatric Nursing, İzmir, Türkiye. E-mail: besteozguven@gmail.com ORCID https://orcid.org/0000-0003-0638-8213

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Conclusion: It was determined that the knowledge level of the mothers about cradle cap care was below the average before the education. It was found that the cradle cap care education provided a significant increase in the knowledge level of the mothers. The findings suggest that structured and evidence-based cradle cap care education delivered by nurses can support appropriate infant skin care practices and ensure sustained maternal knowledge. It is recommended that cradle cap care education be integrated into routine infant follow-up visits in primary health care settings.

Keywords: Cradle cap, infant care, mothers, education, pediatric nursing.

0-12 Aylık Bebeği Olan Annelere Verilen Konak Bakımı Eğitiminin Annelerin Bilgi Düzeylerine Etkisi

Öz

Amaç: Bu çalışmanın amacı, 0-12 aylık bebeği olan annelere verilen konak bakımı eğitiminin annelerin bilgi düzeyleri üzerindeki etkisini araştırmaktır. Bu yaş aralığı (0-12 ay), bebek cildinin bariyer fonksiyonlarının en kırılgan olduğu dönem olması nedeniyle seçilmiştir.

Yöntem: Yarı deneysel türdeki bu çalışma, Nisan 2023 ile Temmuz 2023 tarihleri arasında bir aile sağlığı merkezine kayıtlı 0-12 aylık bebeği olan 33 anne ile yürütülmüştür. Annelere araştırmacılar tarafından hazırlanan "Bebeklerde Konak Bakımı" eğitim programı uygulanmıştır. Veriler eğitimden önce, eğitimden iki hafta sonra ve eğitimden iki ay sonra olmak üzere üç kez "Anne-Bebek Sosyodemografik Özellikleri Formu" ve "Bebeklerde Konak Bakımına Yönelik Anne Bilgi Değerlendirme Formu" ile toplanmıştır. Annelerin bilgi puanları ile anne yaşı ve eğitim durumu arasındaki ilişkilerin değerlendirilmesi için korelasyon ve Tek Yönlü varyans analizi (ANOVA) kullanıldı. Eğitim öncesi ve eğitim sonrası testlerden elde edilen bilgi puanları arasından farkları belirlemek için Tekrarlı Ölçümlerde Varyans Analizi ve Bağımsız Örneklem T Testi yapıldı.

Bulgular: "Bebeklerde Konak Bakımına Yönelik Anne Bilgi Değerlendirme Formu"ndan alınabilecek en yüksek puan 18'dir. Eğitim öncesinde yapılan testin puan ortalaması 6,73, eğitimden sonraki ikinci haftada yapılan testin puan ortalaması 10,15 ve eğitimden sonraki ikinci ayda yapılan testin puan ortalaması ise 10,00'dır. Buna göre, eğitim öncesi test puanı ile annelere verilen eğitim sonrası testlerden elde edilen bilgi düzeyi puanları arasında anlamlı bir fark bulunmuştur ($p<0,05$). Eğitimden iki hafta ve iki ay sonra elde edilen bilgi puanları arasında istatistiksel olarak anlamlı bir fark bulunmamıştır, bu da bilginin zaman içinde korunduğunu göstermektedir. Annelerin yaşı ve eğitim düzeyinin pre test bilgi puanlarında anlamlı farklılık yaratmadığı görülmüştür. Annelerin büyük çoğunluğunun bebek konak bakımına ilişkin bazı temel uygulamaları doğru yaptığı belirlenmiştir. Ancak bazı sorularda yanlış yanıt oranı yüksektir. Yanlış yanıtlanan ifadelerin çoğu kültürel alışkanlıklar ve önceki kuşaklardan aktarılan bilgilerle ilişkilidir.

Sonuç: Eğitim öncesi annelerin konak bakımı ile ilgili bilgi düzeylerinin ortalamanın altında olduğu belirlenmiştir. Verilen konak bakımı eğitiminin annelerin bilgi düzeyinde anlamlı artış sağladığı saptanmıştır. Bulgular, hemşireler tarafından verilen yapılandırılmış ve kanıta dayalı konak bakımı eğitiminin, uygun bebek cilt bakımı uygulamalarını destekleyebileceğini ve annelerin bu konudaki bilgilerinin kalıcı olmasını sağlayabileceğini göstermektedir. Konak bakımı eğitiminin, birinci basamak sağlık hizmetleri ortamlarında rutin bebek takip ziyaretlerine entegre edilmesi önerilmektedir.

Anahtar Sözcükler: Konak, bebek bakımı, anne, eğitim, çocuk hemşireliği.

Introduction

Cradle cap or pityriasis capitis is a type of infantile seborrhoeic dermatitis (ISD)[1,2]. It is a benign, self-limiting condition characterized by inflammatory or non-inflammatory

yellow, oily scales that usually occur on the scalp[1,3,4]. The main cause of the formation is the excessive secretion of fat as a result of the excessive functioning of the sebaceous glands in the scalp of the baby and the accumulation of these secreted fats[5,6]. It can be found in areas of intense sebaceous gland activity, such as the scalp, the T line of the face and the outer ears. No gender or racial differences are observed. It appears between the third week and the first few months after birth. The highest incidence is in the 3rd month of life. Seborrhoeic dermatitis (including cradle cap) is common in early infancy with a prevalence of about 10% in first three months, and peak incidence at 3 months up to 70%. Cradle cap most commonly occurs between birth and three months, with peak incidence around 3 months of age[2,3]. Foley et al. reported that hosts were seen in 70% of infants from three months of age, and the prevalence of hosts was 10.4% in boys and 9.5% in girls[7]. The prevalence of cradle cap formation in infants was found to be 40.3% in a study[8] and 55% in another study[4] conducted in Türkiye. This high early-infancy prevalence underlines why we selected the 0–12 months age range for the present study.

Although cradle cap is a benign and self-limiting skin condition, it can be a source of stress for parents. Families may make wrong applications to the baby's cradle cap area with the stress they experience. Some caregivers may rely on traditional remedies or cultural practices- such as applying butter, herbal mixtures, or heavy oils- that are not evidence-based and may worsen scaling or delay healing. Parents should be properly educated about the management and benign nature of this condition[2,9].

If the cradle cap is not properly cared for, it may spread from the scalp to the forehead, ears and cheeks, and may cause many negative consequences such as a high risk of developing atopic dermatitis in children at a later age[9-11]. The main aim of cradle cap care and treatment is to soften and clean the crusts, inhibit fungal colonisation, if any (e.g. yeasts of genus Malassezia), and prevent secondary infection[12]. The cradle cap care is often carried out by massaging pure extra virgin olive oil or baby oil onto the scalp, waiting for some minutes, then gently washing and combing the hair with a soft baby comb with a ball tip, in the opposite direction of hair growth[2,13]. It has also been reported that in uncomplicated cases, simple emollient-based care (e.g. oils, mild shampoos) may suffice without the need for medicated creams or aggressive treatments[9,14].

In studies, it has been reported that mothers generally apply olive oil in cradle cap care[4,8]. Applying mineral-containing products to the scalp during care prevents the spread of cradle cap[5,15]. In the systematic review of randomised controlled trials, it is seen that products such as oral biotin, topical steroids, promiseb nonsteroidal cream, lactamide monoethanolamine gel, hydrocortisone 1% lotion, lycocalcone 0.025% lotion, flumethasone pivalate 0.02% lotion, eosin 2% aqueous solution and topical gel cream containing pyroton olamine, biosaccharide gum-2 (antifungal), stearyl glycyrrhetinate (anti-inflammatory), zinc 1-pyrrolidone carboxylate (antiseborrheic) components are used in cradle cap treatment. The efficacy of a keratin-regulating formulation containing hydroxy acids, capryloyl-glycine complex, butylavocadate, aloe vera, bourrache oil was also investigated. The samples of the studies in this systematic review are quite small. Therefore, the results cannot be generalised and there is no conclusive evidence that any

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specific treatment is superior. However, guidelines for infant skin care emphasize mild cleansers and emollients, and discourage harsh, irritant or potentially sensitizing topical agents in infants[9,14]. Based on the results of this systematic review, use of shampoos and emollient agents such as baby oil is supported and reassurance that expensive treatments are unnecessary[1]. In one study[10] on cradle cap care, it was reported that the safest way is to care with olive oil containing 3-5% salicylic acid; in another study[1], it was reported that harmful treatments such as salicylic acid, which can be toxic when applied in high doses, should be avoided. In studies investigating the knowledge levels of mothers, it was found that 47.7% and 61.1% of mothers used olive oil in cradle cap care[4,8].

Among the many roles of nurses, the role of caregiver and educator is included. Nurses are obliged to provide care to the patient in line with their knowledge and experience[16]. In addition, nurses protect the patient's health and support their development with the role of educator, which is one of their basic roles[17]. Skin development in infants continues until the first year of life. Since the skin of babies is immature in the first year of life, it is among the leading duties of nurses to protect, maintain and support the development of skin integrity of babies[18]. Thus, the nurse emphasises the roles of caregiver and educator while providing cradle cap care to parents[17,18]. The nurse prioritises patients during cradle cap care and education[17]. It is the responsibility of the nurse to recognise the babies who have started to have a cradle cap early and to plan the education about the care of the family by considering the level of education and socioeconomic status of the family and to assess maternal factors such as education level, parity, and pregnancy intention, as these are known to influence infant care practices.[14]. The nurse should also refer the babies who receive cradle cap care but regress to the relevant physician to investigate and treat the underlying cause and follow up during and after the treatment process[17,18].

In particular, the level of knowledge about cradle cap care practices of mothers who have never received cradle cap care education before should be determined. According to these results, it is extremely important and necessary to increase the knowledge and skill levels of mothers by planning education for the missing information and care practices. Given the high prevalence during early infancy and limited parental knowledge documented in literature, structured parental education on infantile skin care is strongly indicated. Based on this essence, this study was conducted to examine the effect of cradle cap care education given to mothers with infants aged 0-12 months on the mothers' knowledge levels.

Material and Methods

Study Design

This study is a quasi-experimental study in which the effectiveness of the education given is investigated, designed in pretest-posttest order. The study was conducted between April 2023 and July 2023 at Narlıdere Education Family Health Centre No.4 in Izmir Province. The population of the study consisted of 44 mothers with infants aged 0-12 months who were followed up in this centre during the period of the study.

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Sample of the Study

The population of the study consisted of 44 mothers with infants aged 0-12 months who were followed up in this centre during the period of the study. Sample size was calculated using G Power 3.1.9.2 programme. The minimum sample size was found to be 27 when 95% confidence, 80% test power, effect size=0.50 and α margin of error=0.05, taking into account the direct effect sizes standardised by the difference between two dependent means test. A total of 33 mothers who consented to participate in the study and met the inclusion criteria were included in the sample. No case was lost at the end of the study. The power level of the sample was found to be 0.878.

Although cradle cap is most common between 0–3 months, the 0–12-month interval was selected because cradle cap can still occur throughout infancy and health-centre follow-up schedules include the entire first year of life. Additionally, past epidemiological studies indicate that seborrheic dermatitis may persist or recur up to 12 months of age[2,4,8-11].

Inclusion criteria;

- Mothers who participated in the study voluntarily, who could speak, understand, read and write Turkish, and who could be reached by phone.

- Mothers whose babies were born full-term, whose babies did not have any chronic diseases, and whose babies were between 0-12 months old were included in the study.

Data Collection Tools

The research data were collected using the Mother-Infant Sociodemographic Characteristics Form and the Maternal Knowledge Assessment Form for Cradle Cap Care in Infants.

Mother-Infant Sociodemographic Characteristics Form: The form was prepared by reviewing the literature on cradle cap care[2-8,14,15,19]. The form contains 16 questions. The questionnaire consists of questions about mother age, mother education level, baby gender, baby age, baby weight, gestational age of the baby, mode of delivery, baby washing frequency, cleaning agents mother uses while washing, whether the cradle cap has ever occurred in the baby, and if so, when it occurred, how long it lasted, which applications were made for healing, what the care was done with, how long the product applied to the head was kept, and what kind of change occurred in the cradle cap after the applications.

Maternal Knowledge Assessment Form for Cradle Cap Care in Infants: The form was prepared by reviewing the literature on cradle cap care[2-7,12,16-18]. The form includes 18 statements prepared to determine the level of knowledge of mothers about cradle cap care. In the study, after reading these statements, the mothers were asked to tick the “true” option if they think they are true, the “false” option if they think they are

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false, and the “don't know” option if they have no information on the subject. If the answer given by the mothers for each statement was correct, “1” point was given, and if the answer was incorrect or the mother did not know the answer, “0” point was given. The minimum total score to be obtained from the information assessment form is ‘0’ and the maximum total score is ‘18’. Statements numbered 4, 5, 7, 11, 12, 14 and 16 were Reverse Coded (RC).

After the forms were prepared, they were sent to seven faculty members who are experts in the field of Child Health and Diseases Nursing and the final version of the forms was formed with the feedback received. The Kuder-Richardson values of the ‘Maternal Knowledge Assessment Form for Cradle Cap Care in Infants’ were found to be 0.76 for the pretest, 0.58 for the posttest 1, and 0.60 for the posttest 2.

The decrease in reliability coefficients in the post-tests is likely due to reduced score variability because mothers' knowledge levels increased after the education, causing restricted variance in post-intervention assessments[20,21].

Educational Materials of the Study

A powerpoint presentation and an educational brochure, prepared by reviewing the literature on the subject, were used as the educational material for the “Cradle Cap Care Education”[2-8,14,15,19]. Because the education was provided online rather than face-to-face, mothers did not receive hands-on practice, which may limit skill acquisition despite increased theoretical knowledge.

Expert opinions were obtained from seven faculty members who are experts in the field of Child Health and Diseases Nursing with the "Patient Education Materials Assessment Tool for Printable Materials (HEMDA-B)" and “Patient Education Materials Assessment Tool for Audiovisual Materials (HEMDA-G/İ)”[22-23]. As a result of the evaluations received from seven experts for the prepared education contents, the average scores of comprehensibility-applicability were calculated for both the education brochure and the powerpoint presentation. For the education brochure, the mean score of comprehensibility was found to be 72.14% and the mean score of applicability was found to be 85.71%. For the Powerpoint presentation, the mean score for comprehensibility was 85%, while the mean score for applicability was 78.57%. The mean scores of the comprehensibility-applicability of the education materials were determined to be at an acceptable level.

Variables of the Study

Dependent variable of the study; The knowledge scores of the mothers obtained from the "Maternal Knowledge Assessment Form for Cradle Cap Care in Infants".

Independent variable of the study; “Education on Cradle Cap Care for Babies” given to mothers.

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Application Plan of the Study

Mothers were interviewed face-to-face at the beginning of the study and their consent was obtained before data collection. Pre-tests were applied to the mothers before the education. The administration of the pretest took approximately 15-20 minutes for each mother. The "Cradle Cap Care Education" given to mothers was planned to be carried out face-to-face by forming groups collectively, but as mothers did not want to leave their babies at home and come to the family health centre, the education was carried out online in line with the preferences of the mothers as supported by the literatüre. Online education may increase accessibility but may also limit hands-on demonstration opportunities[22]. The education was administered to each mother separately for 20 minutes each at the times and days preferred by the mothers. During the education, the prepared educational presentation was projected on the screen and the subject was explained verbally. At the end of the education, a education brochure prepared by the researchers and containing a summary of the subjects explained was sent to the mothers so that they could access the information whenever they wanted. On the 15th day after the education and at the 2nd month after the education, post-tests were administered to the mothers via an online questionnaire. During the data collection phase, it was ensured that sufficient time was given to complete the questionnaires.

Ethical Statement

Ethics committee permission was obtained from Izmir Kâtip Çelebi University Non-Interventional Ethics Committee *(Date: 22/09/2022, Number: 0412),* and application permission was obtained from Izmir Provincial Health Directorate *(Date: 13/03/2023, Number: 211227011)*. Written informed consent was obtained from the mothers who participated in this study. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Analysing the Data

SPSS Statistics 24.00 programme was used for data analysis. Normality distribution, skewness and kurtosis values were examined and it was assumed to be normally distributed if they were between ±3.29[24]. Repeated Measures Analysis of Variance was performed to determine the difference between the knowledge levels of mothers before and after the education about cradle cap care in infants. Independent Sample t Test was performed to determine the difference between the pre and post-test results of the mothers whose infants had and did not have cradle cap before and after the education on the care of cradle cap in infants. Additionally, correlation and ANOVA analyses were conducted to examine relationships between maternal demographics (age, education level) and pre-education knowledge scores.

Results

Sociodemographic characteristics of mothers and infants and information on the cradle cap and cradle cap care are included in Table 1.

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Table 1. Mother-infant sociodemographic characteristics

	Min-Max	**Mean ± SD**
Mother age (year) (n=33)	20-41	28.76±4.64
Baby age (year) (n=33)	1-12	6.91±4.57
Gestational age of the baby (month) (n=33)	8-10	9.06±0.58
Baby weight (kg) (n=33)	2.30-5.30	3.29±0.87
Time of occurrence of cradle cap in the baby (month) (n=11)	0.3-4	2.12±1.27
Recovery period of the cradle cap (week) (n=11)	1-24	10.14±8.86
Waiting time of the product applied on the baby's head (minutes) (n=9)	1-60	21.56±18.49
	n	**%**
Mother education level (n=33)		
Secondary school graduate	2	6.1
High school graduate	10	30.3
Higher education graduate	21	63.6
Baby gender (n=33)		
Female	14	42.4
Male	19	57.6
Mode of delivery (n=33)		
Vaginal section (normal delivery)	9	27.3
Caesarean section	24	72.7
Baby Washing Frequency (n=33)		
1 time per week	4	12.1
2 times a week	8	24.2
3 times a week	11	33.3
4 times a week	1	3.0
Every day	9	27.3
Cleaning agents mother uses while washing (n=33)		
Soap and baby shampoo	8	24.2
Only baby shampoo	25	75.8
Whether the cradle cap has ever occurred in the baby? (n=33)		
Yes	11	33.3
No	22	66.7
Which applications were made for healing? (n=11)		
Not doing anything	2	18.2
Applying baby oil/olive oil	6	54.5
Other	3	27.3
What the cradle cap care was done with? (n=11)		
No product has been used	2	18.2
Baby oil	2	18.2
Olive Oil	5	45.5
Baby shampoo	2	18.2
What kind of change occurred in the cradle cap after the applications (n=11)		
Decreased	5	45.5
Healed	4	36.4
There's been no change.	2	18.2

n=number, %=percentage, Min-Max= minimum-maximum, Mean ± SD= mean ± standard deviation

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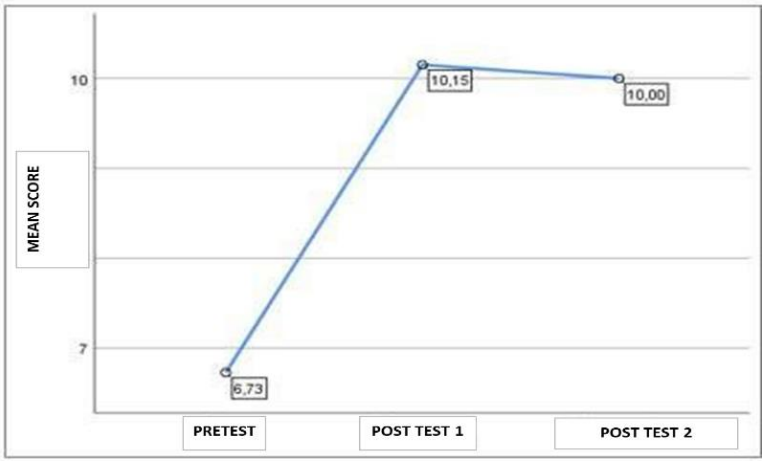
The mean knowledge scores of the mothers before and after the education are given in Graph 1. The minimum score of the pre-education test for cradle cap care in infants was found to be “0” because two mothers answered all the statements “incorrectly/don't know”.

Graph 1. Mean of maternal knowledge levels regarding cradle cap care in infants



The normality assumption results of mothers' pre-education and post-education knowledge score averages regarding cradle cap care in infants are given in Table 2. Since the skewness and kurtosis values obtained from the pre and post-education tests of the mothers were within the range of ±3, it was determined that they showed a normal distribution (Table 2).

Table 2. Normality assumption results of mothers' pre- and post-education knowledge levels regarding cradle cap care in infants (n=33)

	Skewness	**Kurtosis**	**Status**
Pre Test	-.19	-.67	Normal
Post Test 1	-1.21	2.19	Normal
Post Test 2	-1.40	2.56	Normal

The difference between the mean knowledge scores obtained from the knowledge tests administered to the mothers before the education, two weeks after the education, and two months after the education was significant ($p<.05$) (Table 3).

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Table 3. Differences between mothers' test means before and after education regarding cradle cap care in infants (n=33)

n	Mean	SD	F	p	Difference
Pre Test	6.73	3.39	14.999	.00*	Pre Test < Post Test 1 Pre Test < Post Test 2
Post Test 1	10.15	2.28			
Post Test 2	10.00	2.41			

n=number, Mean=Average, SD=Standard Deviation, F: Repeated measures analysis of variance (Pillai's Trace test), *p< .05: Significance level

According to the results of the Pearson correlation analysis conducted to examine the relationship between maternal age and pre-education knowledge level presented in Table 4, no statistically significant relationship was found between them (p=.871). This result indicates that maternal age is not related to knowledge level in the study sample (Table 4).

Table 4. The relationship between mothers' age and pre-education test scores (n=33)

	Pre Test Score	
Maternal age	**r**	**p**
	.029	.871

r= Pearson correlation coefficient, p= Significance level

The one-way analysis of variance (ANOVA) examining the relationship between the mothers' educational status and their pre-training knowledge level, as shown in Table 5, revealed no statistically significant difference (p=0.407). This finding indicates that knowledge levels are similar across different maternal education groups (Table 5).

Table 5. The relationship between mothers' educational status and pre-education test scores (n=33)

Source of Variance	Sum of Squares	df	Mean Square	F	p
Between Groups	4.011	10	.401	1.096	.407
Within Groups	8.050	22	.366		
Total	12.061	32			

df= degree of freedom for each variation source, F= ANOVA F test, p= Significance level

Table 6 shows the distribution of the answers given by the mothers to the knowledge questions about cradle cap care in infants in the tests conducted two weeks after the

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education and two months after the education. It was determined that 87.9% of the mothers before the education gave the correct answer at the highest rate to the statement Phrases 1, 78.8% of the mothers gave the correct answer to the statement Phrases 3 and 78.8% of the mothers gave the correct answer to the statement Phrases 4. It was found that 15.2% of the mothers gave the wrong answer at the highest rate to the statement Phrases 5; 57.6% of the mothers gave the "don't know" answer at the highest rate to the statements Phrases 7 and Phrases 14. In the tests administered in the second week and second month after the education, it is seen that all of the mothers gave the highest correct answer to the statement Phrases 1; 87.9% of them gave the highest incorrect answer to the statement Phrases 11; 24.2% of them gave the highest "don't know" answer to the statement Phrases 14 (Table 6).

Table 6. Distribution of mothers' responses to statements regarding cradle cap care in infants

Phrases for Cradle Cap Care in Infants	**Pre-education Test Distribution of Responses**						**Post-education 1st test (after 2 weeks) Distribution of Responses**						**Post-education 2st test (after 2 months) Distribution of Responses**					
	True		**False**		**D K**		**True**		**False**		**D K**		**True**		**False**		**D K**	
	n	**%**	**n**	**n**	**%**	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Cradle cap is scales that usually occur on the upper layers of the scalp	**29**	**87.9**	-	-	4	12.1	33	100	-	-	-	-	33	100	-	-	-	-
The cradle cap occurs as a result of excessive functioning of the sebaceous glands in the scalp.	15	45.5	2	6.1	16	48.5	**28**	**84.8**	-	-	5	15.2	**28**	**84.8**	1	3.0	4	12.1
Cradle cap is most common in the first 3 months in infants	**26**	**78.8**	2	6.1	5	15.2	**32**	**97.0**	1	3.0	-	-	**30**	**90.9**	2	6.1	1	3.0
Cradle cap cause pain and suffering to the baby (RC).	1	3.0	**26**	**78.8**	6	18.2	2	6.1	**26**	**78.8**	5	15.2	4	12.1	**25**	**75.8**	4	12.1
The cradle cap will heal on its own without doing anything (RC).	5	15.2	17	51.5	11	33.3	1	3.0	**28**	**84.8**	4	12.1	2	6.1	**29**	**87.9**	2	6.1
If the cradle cap is not cleaned, it can cause serious problems.	10	30.3	8	24.2	15	45.5	22	66.7	4	12.1	7	21.2	**25**	**75.8**	2	6.1	6	18.2

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It is sufficient to clean the cradle cap care once every 3 days (RC).	8	24.2	6	18.2	19	57.6	14	42.4	14	42.4	5	15.2	11	33.3	17	51.5	5	15.2
After a good cleaning, the cradle cap heals without the need for additional treatment.	16	48.5	9	9.1	14	42.4	**27**	**81.8**	3	9.1	3	9.1	24	72.7	7	21.2	2	6.1
If untreated, the cradle cap may spread from the scalp to the forehead and cheeks.	11	33.3	7	21.2	15	45.5	24	72.7	3	9.1	6	18.2	**26**	**78.8**	3	9.1	4	12.1
The scalp with cradle cap can be massaged by applying baby oil.	19	57.6	5	15.2	9	27.3	**25**	**75.8**	6	18.2	2	6.1	**27**	**81.8**	4	12.1	2	6.1
The scalp with cradle cap can be massaged by applying sunflower oil (RC).	1	3.0	22	66.7	10	30.3	2	6.1	**29**	**87.9**	2	6.1	2	6.1	**27**	**81.8**	4	12.1
After applying appropriate oil to the scalp with cradle cap, it should be left for 60 minutes and then cleaned (RC).	9	27.3	9	27.3	15	45.5	8	24.2	22	66.7	3	9.1	4	12.1	24	72.7	5	15.2
After applying appropriate oil to the scalp with cradle cap, it should be left for 20 minutes and then cleaned.	13	39.4	5	15.2	15	45.5	**26**	**78.8**	4	12.1	3	9.1	**25**	**75.8**	4	12.1	4	12.1
Baby shampoo should not be applied to the scalp with cradle cap to prevent irritation (RC).	4	12.1	10	30.3	19	57.6	7	21.2	18	54.5	8	24.2	7	21.2	18	54.5	8	24.2
After the formation of cradle cap, baby shampoo can be used to clean the scales on the scalp.	12	36.4	5	15.2	16	48.5	23	69.7	6	18.2	4	12.1	**25**	**75.8**	3	9.1	5	15.2

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After applying baby shampoo, it can be kept for a long time to soften the scales on the scalp (RC).	3	9.1	18	54.5	12	36.4	2	6.1	**27**	**81.8**	4	12.1	5	15.2	**26**	**78.8**	2	6.1
After proper cleaning of the scalp with cradle cap, it should be combed with baby combs with a ball tip.	19	57.6	1	3.0	13	39.4	**28**	**84.8**	3	9.1	2	6.1	**26**	**78.8**	4	12.1	3	9.1
The baby's hair should be combed in the opposite direction to the direction of hair growth.	21	63.6	2	6.1	10	30.3	**31**	**93.9**	2	6.1	-	-	**26**	**78.8**	3	9.1	4	12.1

n=number, %=percentage, RC =responses were reverse coded. DK: Don't Know

Discussion

When the results of the study were examined, it was found that the average knowledge scores of the mothers in the tests conducted two weeks and two months after the cradle cap care training were higher than the average knowledge scores in the test conducted before the training. In addition, the minimum score obtained from the pre-education test was determined as "0" because two mothers answered all of the cradle cap care knowledge questions as incorrect or 'don't know' before the education was given. Mothers gave correct answers to these questions, which they answered incorrectly before the education, after the education. Significant differences were found between the mean scores of the information received by the mothers before and after the education on cradle cap care ($p<0.05$). This finding is consistent with studies showing that structured parent education significantly increases knowledge levels regarding infant skin care and benign dermatological conditions such as seborrheic dermatitis[25,26].

There was no statistically significant difference between the mean knowledge score of the mothers two weeks after the education on cradle cap care and the mean knowledge score two months later ($p=1.00$). Maintaining the level of knowledge of the mothers was linked to the fact that an educational brochure was left to the mothers for their continuous use and that the mothers consolidated their knowledge from this brochure. Similarly, it has been reported that written and visual educational materials support the retention of knowledge after training and that repeatability, especially in the home environment, reinforces learning[26].

In a study in which the effect of the education given on cradle cap care, umbilical cord care and breastfeeding on the knowledge level of mothers was examined, it was found

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that the education given to mothers significantly increased their mean scores after the education[27]. Although cradle cap–specific education studies are limited, a substantial body of evidence exists regarding infant skin care, seborrheic dermatitis management, and parental education interventions, which supports the findings of the present study[7,9,28]. For this reason, the findings of the study were discussed with the studies comparing the knowledge levels of mothers after the education given for different care needs of infants. In a study in which mothers were given diaper rash and breastfeeding education and the effectiveness of the education was examined, it was determined that the education was significantly effective on the knowledge levels of mothers[29]. In another study investigating the effect of the education given to mothers about breastfeeding and breast milk on their level of knowledge, a significant difference was observed between the mean scores before and after the education[30]. In a study investigating the effectiveness of the education given to mothers about the complementary feeding, it was found that there was a significant difference between the mean knowledge scores of the group that received education and the group that did not receive education[31]. In a study in which the effectiveness of the education given to mothers about newborn screening tests was evaluated, the mean scores obtained from the test applied after the education increased significantly compared to the pre-education period[32]. In a study in which standard care and developed care education were given to mothers with premature babies during discharge and the results were compared, it was reported that the knowledge levels of the mothers after both educations were significantly higher than the results before the education was given and the advanced care education was superior to the standard care education[33]. These findings indicate that parent education is effective not only in specific areas of care but also in general infant health and skin care practices.

Table 4 and Table 5 shows that there is no significant relationship between maternal age and educational level and the pre-education knowledge scores. This finding aligns with other research reporting that maternal age may not be significantly associated with health-related knowledge levels in certain populations. For example, Fegita et al. reported no significant correlation between maternal age and antenatal care knowledge[34].The finding that there is no significant relationship between maternal education level and knowledge scores is consistent with studies showing that formal education level is not always a strong predictor of specific health knowledge outcomes in community settings. In a study on stunting and growth knowledge, no significant correlation was observed between maternal education and knowledge level[35]. Similarly, a study on knowledge of exclusive breastfeeding also found that maternal education did not show a significant relationship with knowledge of exclusive breastfeeding[36]. However, there are also studies reporting a positive relationship between maternal education and general health knowledge scores. This indicates that this relationship may vary depending on the context, the type of knowledge measured, and access to information sources[37,38].

Table 6 shows that even after the training period, incorrect answers and “I don't know” responses regarding sunflower oil (Phrases 11) and baby shampoo use (Phrases 14) persisted, suggesting that cultural practices and traditional family knowledge may take

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precedence over scientific knowledge. The literature also indicates that parents' perception of vegetable oils as “natural and harmless” can lead to incorrect practices[2,17]. For this reason, it is recommended that nurses explicitly address misconceptions during their training and emphasize evidence-based practices. Additionally, the decrease in the reliability coefficients of the measurement tool in post-tests can be explained by the reduction in response variance due to the increase in knowledge levels after training; a similar situation has been reported in studies involving educational interventions[25].

Babies are defenceless and dependent on a caregiver. The health of babies depends on the knowledge of mothers, who are the primary caregivers. This study and other studies in the literature emphasise the importance of conducting education to increase the level of knowledge of mothers about infant care. However, the fact that the training was provided online in this study may have limited the acquisition of practical skills. The literature reports that face-to-face and hands-on training better supports psychomotor skill development[26]. Therefore, it is recommended that hybrid or applied education models be evaluated in future studies.

Limitations of the Study

The limitations of the study include the inability to generalise the results due to the fact that the study was conducted in a single centre, and the inability to provide face-to-face education due to the mothers' preferred online education.

Another limitation is that variables such as parity (number of children) and whether the baby was a planned/wanted pregnancy were not evaluated. These factors may affect mothers’ caregiving experience, motivation to participate in education, and responsiveness to educational interventions. Furthermore, since the study was completed, additional analyses regarding these variables could not be performed; however, acknowledging these limitations is important for the interpretation of the findings.

However, the study contributes to the field as it provides a measurement material for determining the level of knowledge of mothers about the cradle cap care of infants and the creation of educational materials to complete this missing information.

Despite these limitations, the study offers valuable evidence regarding the effectiveness of cradle cap care education and highlights the need for future studies with larger samples, multi-centre designs, and comprehensive analyses including maternal education level, parity, and pregnancy planning status.

Conclusion

As a result of the study, it was determined that the mothers' knowledge levels before the education were below average; the scores they received from the knowledge test administered two weeks and two months after the education increased; and there was a significant difference between the mean scores ($p<0.05$). No statistically significant

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difference was found between the mean knowledge score of the mothers two weeks after the education and the mean knowledge score two months after the education (p:1.00). This finding suggests that the cradle cap care education provided not only improved maternal knowledge in the short term but also ensured the maintenance of knowledge over time. It was concluded that the cradle cap care education given to the mothers was effective in increasing the level of knowledge. From a clinical and nursing perspective, structured and evidence-based cradle cap care education can support mothers in adopting appropriate infant skin care practices, prevent incorrect or potentially harmful traditional applications, and reduce parental anxiety related to benign dermatological conditions. Based on the findings of this study, it is recommended that cradle cap care education be integrated into routine infant follow-up visits in primary health care settings and delivered by nurses using standardized educational materials. Future studies should include larger and multi-centre samples, incorporate hands-on and face-to-face educational components, and examine the effects of maternal characteristics such as education level, parity, and pregnancy planning status on learning outcomes.

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REFERENCES

1. Hassan S, Szeto MD, Sivesind TE, et al. From the Cochrane Library: Interventions for infantile seborrheic dermatitis (including cradle cap). *J Am Acad Dermatol*. 2022;86(2):e87-e88. doi: 10.1016/j.jaad.2021.09.031.

2. Nobles T, Harberger S, Krishnamurthy K. *Cradle Cap*. Treasure Island (FL): StatPearls Publishing; 2018.

3. Chiriac A, Wollina U. Pediatric dermatitis seborrhoica - A clinical and therapeutic review. *Indian Dermatol Online J*. 2024;15(3):383-391. doi: 10.4103/idoj.idoj_593_23.

4. Çınar İÖ, Aslan GK, Kartal A, İnci FH, Koştu NA. An examination of the traditional methods mothers use in caring for infants aged 0-1 years. *TAF Prev Med Bull*. 2015;14(5):378-386. doi: 10.5455/pmb.1-1426018987.

5. Sarkar R, Basu S, Agrawal RK, Gupta P. Skin care for the newborn. *Indian Pediatrics*. 2010;47(7):593-598. doi: 10.1007/s13312-010-0132-0.

6. Zenciroğlu A, Koç O. *Ministry of Health Neonatal Intensive Care Nursing Course Booklet*. Ankara: Ministry of Health; 2014.

7. Foley P, Zuo Y, Plunkett A, Merlin K, Marks R. The frequency of common skin conditions in preschool-aged children in Australia: Seborrheic dermatitis and pityriasis capitis (cradle cap). *Arch Dermatol*. 2003;139(3):318-22.

8. Işık MT, Akçınar M, Kadıoğlu S. Traditional practices for mothers and newborns during pregnancy, childbirth, and the postpartum period in the province of Mersin. *International Journal of Human Sciences*. 2010;7(1):63-84.

9. Simpson EL, Chalmers JR, Hanifin JM, et al. Emollient enhancement of the skin barrier from birth offers effective atopic dermatitis prevention. *J Allergy Clin Immunol*. 2014;134(4):818-23. doi: 10.1016/j.jaci.2014.08.005.

10. İnaloz HS. The pathogenesis and treatment of seborrhoeic dermatitis. *T Klin J Med Sci*. 2002;22:239-244.

11. Yıldız K. The Role of Malassezia Species in Seborrheic Dermatitis. [medical specialization thesis]. Adana, Turkey: Faculty of Medicine, Çukurova University; 2010.

12. Bozkurt NM, Başak PY. Seborrheic dermatitis treatment and new treatment approaches. *Turkderm*. 2007;41:112-116.

13. Patrizi A, Neri I, Virdi A, Gurioli C. Frequent newborn skin diseases. *Clinical Dermatology*. 2016;4(3-4):82-86.

14. Victoire A, Magin P, Coughlan J, Van Driel ML. Interventions for infantile seborrhoeic dermatitis (including cradle cap). *The Cochrane Database of Systematic Reviews*. 2019;3(3):CD011380. doi: 10.1002/14651858.CD011380.pub2.

15. Stalder JF. Skin Care of the Newborn. In: Harper J, Oranje A, Prose N, eds. *Textbook of Pediatric Dermatology*. 2nd ed. Oxford: Blackwell Publishing; 2006:48-54.

16. Pentecost C, Frost J, Sugg HV, Hilli A, Goodwin VA, Richards DA. Patients' and nurses' experiences of fundamental nursing care: A systematic review and qualitative synthesis. *Journal of Clinical Nursing*. 2020;29(11-12):1858-1882. doi: 10.1111/jocn.15082.

17. Gedük EA. The evolving roles of the nursing profession. *Journal of Health Sciences and Professions*. 2018;5(2):253-258. doi: 10.17681/hsp.358458.

18. Utaş S. Skin care for newborns. *Turkish Dermatology & Venerologyl/Turderm*. 2011;45(3). doi: 10.4274/turkderm.001.

19. Aksoy M, Aksu Arıca D. Seborrheic dermatitis. *Turkey Clinics Journal of Dermatology*. 2016;26(2):90-100. doi: 10.5336/dermto.2015-47766.

20. Micali G, Pulvirenti N, Dall'Oglio F, Tedeschi A, Quattrocchi E, Lacarrubba F. Treatment of cradle cap in infants with a new cosmetic non-steroidal gel cream: Clinical, laboratory, and instrumental evaluation. *Journal of Cosmetic Dermatology*. 2021;20:14-17.

21. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459-467.

22. Su B, Zhang T, Yan L, et al. Online medical teaching in China during the COVID-19 pandemic: Tools, modalities, and challenges. *Frontiers in Public Health*. 2021;9,797694.

23. Paylan Akkoç C. Validity and Reliability Study of the Patient Education Material Assessment Tool in Turkish.[master's thesis]. Izmir, Turkey: Institute of Health Sciences, Ege University; 2020.

24. Groeneveld RA, Meeden G. Measuring skewness and kurtosis. *Journal of the Royal Statistical Society Series D: The Statistician*. 1984;33(4):391–399. doi: 10.2307/2987742.

25. Kuo SC, Chen YS, Lin KC, Lee TY, Hsu CH. Evaluating the effects of an Internet education programme on newborn care in Taiwan. *Journal of Clinical Nursing*. 2009; 18(11),1592–1601. doi: 10.1111/j.1365-2702.2008.02732.x.

26. Shrestha S, Adachi K, Petrini MA, Shrestha S, Khagi BR. Development and evaluation of a newborn care education programme in primiparous mothers in Nepal. *Midwifery*. 2016;42,21–28. doi: 10.1016/j.midw.2016.09.006.

27. Doğan N, Yiğit R, Erdoğan S. Evaluation of prenatal education provided to mothers regarding newborn care before and after delivery. *Mersin University Journal of Health Sciences*. 2013;6(3):10-18.

28. Telofski LS, Morello III AP, Mack Correa MC, Stamatas GN. The infant skin barrier: Can we preserve, protect, and enhance the barrier? *Dermatology Research and Practice*. 2012;(1),198789.

29. Çelik SN. The Effect of Breastfeeding and Education on Preventing Diaper Dermatitis in Infants. [master's thesis]. Denizli, Turkey: Institute of Health Sciences, Pamukkale University; 2023.

30. Koç Z, Çınarlı T, Sağlam Z. Determining mothers' knowledge levels about breast milk and breastfeeding and evaluating the effectiveness of education. *Samsun Journal of Health Sciences*. 2017;2(1):1-13.

31. Şahin GA, Kaya N, Kondolot M. Determining mothers' knowledge levels about breast milk and breastfeeding and evaluating the effectiveness of education. *Samsun Journal of Health Sciences*. 2020;48(1):10-19. doi: 10.33076/2020.BDD.1257.

32. Evcili F, Demirel G, Yurtsal ZB, Yılmaz EA. The effect of newborn screening test education on mothers' knowledge level. *Gümüşhane University Journal of Health Sciences*. 2017;6(1):80-86.

33. Cesur Çınar G. The Effect of Standard and Advanced Care and Nutrition Education Provided to Mothers of Premature Infants Hospitalized in the Neonatal Intensive Care Unit at the Time of Hospital Discharge on Mothers' Knowledge and Attitudes. [medical specialization thesis]. Edirne, Turkey: Faculty of Medicine, Trakya University Hospital, Department of Pediatrics; 2020.

34. Fegita P, Hikmah M, Malik R. Relationship between education level, age and knowledge of pregnant women with antenatal care status. *Scientific J*. 2022;1(2):158–166.

35. Rahmah AA, Yani DI, Eriyani T, Rahayuwati L. Correlation mother's education and received stunting information with mother's stunting knowledge. *Journal of Nursing Care*. 2023;6(1).

36. Salsabila L, Hermawati L, Subadiyasa IMA. Maternal knowledge and education level as determinants of exclusive breastfeeding practices. *Journal of Midwifery and Reproduction*. 2025;9(1):1-9.

37. Greenaway ES, Leon J, Baker DP. Understanding the association between maternal education and use of health services in Ghana: Exploring the role of health knowledge. *J Biosoc Sci*. 2012;44(6):733-47. doi: 10.1017/S0021932012000041.

38. Sørensen K, Van den Broucke S, Fullam J, et al. Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*. 2012;12(1):80.

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