

“Effectiveness Of Application Of Egg White On Nappy Rash Among The Babies At Selected Hospitals From Pediatric Units”

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Abstract :

Introduction

Diaper dermatitis commonly referred to as nappy rash and it is a frequent skin condition observed in infants and young children. It typically appears in the area covered by a diaper and is most commonly caused by prolonged exposure to moisture, urine, feces, or retained soap or detergent. However, this definition is somewhat limited and does not fully capture the complexities of the condition. Diaper dermatitis is a term that encompasses various forms of skin irritation in the diaper region, including other skin conditions such as seborrheic dermatitis, psoriasis, and bullous dermatoses. It is important to recognize these other potential causes of rashes in the diaper area to avoid misdiagnosis, which could lead to delayed or inappropriate treatment, and in some cases, may even divert attention away from more serious, life-threatening conditions. [1]

At the skin in the diaper area is particularly susceptible for the irritation and infection due to a combination of factors. The friction caused by the diaper, prolonged exposure to moisture, and the presence of urea and fecal matter create an environment that weakens the skin's protective barrier, the stratum corneum. This breakdown increases the likelihood of opportunistic infections which are commonly associated with diaper dermatitis. These infections can exacerbate the condition and lead to further complications. [2]

In addition to irritant contact dermatitis, diaper dermatitis can also be influenced by underlying factors such as food allergies, which can trigger skin reactions ranging from mild rashes to more severe forms like eczema or urticaria. It's important to consider these possibilities when assessing a child with skin lesions in the diaper region to ensure an accurate diagnosis. [3]

Treatment for diaper dermatitis typically involves minimizing irritants and creating a protective barrier over the skin. Various commercially available topical products, as well as traditional home remedies, are often recommended to manage the condition. These products help soothe and protect the sensitive skin in the diaper area, reducing redness, irritation, and discomfort. The goal is to maintain a dry and clean environment to promote healing and prevent further irritation.

In conclusion diaper dermatitis is a common issue for infants and young children, but it can often be prevented and managed with appropriate care. While modern treatments are available, it's equally important to consider traditional methods to help alleviate symptoms. Parents and caregivers should remain vigilant in monitoring for signs of diaper rash and seek medical advice if the condition persists or worsens, ensuring that any underlying causes are properly addressed.

Aim:

Aim: To assess the effectiveness of egg white application in reducing or healing nappy rash in babies

Methodology:

The study employed a pre-test and post-test control group design to evaluate the effectiveness of an intervention. Forty participants were chosen using non-probability purposive sampling. To establish the content validity of the assessment tool, it was reviewed by 20 experts from different fields. An observation checklist, commonly used for evaluating diaper rash skin conditions, served as the primary assessment tool. The tool's reliability was determined through the inter-rater method, and the reliability coefficient (r) was calculated using the Karl Pearson formula, yielding an r value of 0.08, demonstrating the tool's reliability. The study involved infants aged 0-18 months who were admitted to the pediatric unit with diaper rash. Exclusion criteria included babies whose parents did not provide consent and those with egg white allergies.

Results :

A paired t-test (or other relevant statistical test) was conducted to compare the severity scores before and after the application of egg white. The results showed a statistically significant reduction in the severity of nappy rash when compared experimental group with control group, The post test score of skin temperature in 75% of babies was normal on touch in experimental group where it was

warm on touch in 40% of babies in control group. The colour of skin was pink in 100 % babies in control group where 64 % babies had red colour of skin in control group. 35 % babies had Macules on skin lesion in control group, 6% babies had Papules on skin lesion in control group. 65 % babies had Erythema on skin in control group and 5% babies had Erythema on skin in experimental group. 35 % babies had mild pain in control group and 35 % babies had mild, 30 % babies experienced moderate and 35 % had experienced severe pain in control group, And 100 % babies had experienced mild pain in experimental after the application of egg white. The Total mean score of skin condition after application of egg white in control group was 15.55, S.D. is 4.5592 and in experimental group it was 6.5, S.D. is 0.7608 and t - value is 8.7559 and p - value is $0.00001 < 0.05$ (at 5 % level of significance). which is highly significant. Thus the results of this study proved that application of egg white on nappy rash among babies was effective.

Conclusion :

In the present study, the p -value for nappy rash in infants was 0.00001 and it is less than 0.005 thus it indicates that there is a significant difference between the post-test scores of the experimental and control group. Hence the null hypothesis is rejected. The use of egg white on nappy rash demonstrated a significant improvement in the pain levels of the skin in the post-test, suggesting that egg white was effective in treating nappy rash in infants.

Categories: Nursing

Keywords: Effectiveness , Nappy rash , Egg White , Pediatric units

Introduction:

Diaper dermatitis is a commonly referred as a diaper rash and it is one of the a common issue in pediatric care, often causing significant discomfort for infants and their caregivers due to its persistent nature despite consistent efforts to manage it during diaper changes. Although it can affect any infant who wears diapers, it is most frequently observed in infants between 9 and 12 months of age. When evaluating a case of diaper dermatitis, it is important to consider a range of potential causes. A comprehensive assessment should include the infant's medical and family history an examination of appearance and location of rash and an analysis of factors that may contribute, such as the use of topical products, diet, or other exposures. Irritant contact dermatitis is the leading cause of diaper dermatitis. In this type, the skin's protective barrier is mainly disrupted by two factors. i.e the increased moisture resulting from the diaper's occlusive nature combined with the presence of urine and feces, and a higher pH level in the affected area. [4] . Other skin conditions that can present with diaper rash include seborrheic dermatitis, atopic dermatitis, psoriasis vulgaris, and infections like candidiasis, scabies, bullous impetigo, and tinea cruris. Less common causes include Langerhans cell histiocytosis, congenital syphilis, child abuse, and acrodermatitis enteropathica. Correct diagnosis is crucial for effective management, as the treatment for each cause varies [5].

Diaper dermatitis is a prevalent condition that can lead to considerable discomfort for infants and present difficulties for caregivers. A thorough differential diagnosis is essential to identify any underlying conditions, such as bacterial or viral infections. Nurses play an important role in educating families about the risk factors for diaper dermatitis, methods of prevention through proper diaper hygiene, and the use of effective, evidence-based treatments[6] . Midwifery care also involves continuous monitoring of the infant's condition. This care includes ensuring the infant's personal hygiene is maintained. [7] . When managing diaper rash, choosing the appropriate topical treatments should be guided by standardized protocols that consider the underlying cause [8] .One natural remedy that may be worth considering for soothing and healing a baby's irritated skin is egg white, known for its unique antibacterial properties. This remedy is suitable for older babies who are eating solid foods and have no egg allergies. To use it, crack a fresh egg into a clean bowl, separate the white from the yolk, and gently whisk the egg white. Store it in the refrigerator. Clean the diaper area carefully, patting it dry with a soft cloth or cotton wool. Do not wipe the area. Dip a cotton ball into the chilled egg white and gently dab it onto the affected area. The cool egg white will soothe the inflamed skin. Allow it to air dry before putting on a clean diaper [9].

Materials And Methods :

A paired t-test (or other relevant statistical test) was conducted to compare the severity scores before and after the application of egg white. The results showed a statistically significant reduction in the severity of nappy rash when compared experimental group with control group , The post test score of skin temperature in 75% of babies was normal on touch in experimental group where it was warm on touch in 40% of babies in control group. The colour

of skin was pink in 100 % babies in control group where 64 % babies had red colour of skin in control group. 35 % babies had Macules on skin lesion in control group ,6% babies had Papules on skin lesion in control group .65 % babies had Erythema on skin in control group and 5%babies had Erythema on skin in experimental group. 35 % babies experienced mild pain in control group In the control group, 35% of infants experienced mild pain, 30% had moderate pain, and 35% had severe pain. In contrast, in the experimental group, 100% of the infants reported mild pain after the application of egg white. The total mean score for skin condition after the application of egg white in the control group was 15.55 with a standard deviation of 4.5592, while in the experimental group, it was 6.5 with a standard deviation of 0.7608. The t-value was 8.7559, and the p-value was 0.00001, which is less than 0.05 (at the 5% level of significance), indicating a highly significant result. Therefore, the findings of this study demonstrate that the application of egg white on nappy rash in infants was effective.

Results :

Section I: distribution of Frequency and percentages of Demographic Variables.

Table No 1: Demographic Variables

N=20+20

Sr. No.	Demographical - Variables		Experimental Group		Control Group	
			Frequency	Percentage	Frequency	Percentage
1.	Age in months	Birth to 1 month	8	40%	2	10%
		2-6 Months	7	35%	7	35%
		7-12 Months	5	25%	10	50%
		13-18 Months	0	0%	1	5%
2.	Duration of nappy used	1 Hrs	0	0%	1	5%
		2 Hrs.	0	0%	7	35%
		3 Hrs	4	20%	7	35%
		4 Hrs.	7	35%	5	25%
		5 Hrs.	7	35%	0	0%
		6 Hrs.	2	10%	0	0%
3.	Type of nappy used	Cloth	0	0%	0	0%
		Cotton	20	100%	20	100%

Result-

In terms of age, 40% of infants in the experimental group were between 0-1 month old, compared to 10% in the control group. In the 2-6 month age range, 35% of infants were in both the experimental and control groups. For the 7-12 month age group, 25% were in the experimental group, while 50% were in the control group. In the 18-month age category, 5% of infants were in the control group.

Regarding the duration of nappy use, 5% of infants in the control group wore nappies for 1 hour, 35% for 2 hours, and 20% of infants in the experimental group used nappies for 3 hours, with another 35% in the control group. For

4-hour nappy use, 35% were in the experimental group and 25% in the control group. Additionally, 35% of infants in the experimental group used nappies for 5 hours, and 10% wore them for 6 hours.

As for the type of nappy used, all babies in both the experimental and control groups wore cotton nappies.

Table No. 2 : Frequency and Percentage Distribution of Skin Condition Before the Application of Egg White on Nappy Rash Among Babies in the Control Group.

n= 40

Characteristics		Control group		Experimental group	
		Frequency	Percentage	Frequency	Percentage
Temperature of skin	Normal	8	40%	0	0%
	Warm on touch	12	60%	4	20%
	Cold on touch	0	0%	16	80%
Colour of skin	Pink	1	5%	0	0%
	Red	13	65%	2	10%
	Bright red	6	30%	18	90%
Skin lesion	Blisters	7	35%	1	5%
	Macules	7	35%	10	50%
	Papules	6	30%	9	45%
	Erythema	13	65%	9	

Skin condition of rash					45%
	Scaling	7	35%	11	55%
Pain	Mild	0	0%	1	5%
	Moderate	10	50%	10	50%
	Severe	10	50%	9	45%

Result :

According to study 40% of babies had normal skin temperature in control group. 60% of babies had warm on touch in control group were as 20% babies had warm on touch in experimental group and 80% babies had cold on touch in experimental group.

- According to study 1% baby had pink skin colour in control group. 65% babies had red colour skin in control group were as 10% babies had red colour skin in experimental group and 30% babies had bright red skin colour in control group were as 90% babies had red colour skin in experimental group .

- According to study 35% babies had blisters on skin lesion in control group and 5% babies had blisters on skin lesion in experimental group. 35% babies had Macules on skin lesion in control group and 50% babies had Macules on skin lesion in experimental group. 30% babies had Papules on skin lesion in control group and 45% babies had Papules on skin lesion in experimental group.

. According to study 65 % babies had Erythema on skin in control group and 45% babies had Erythema on skin in experimental group. 35 % babies had Scaling on skin lesion in control group and 55% babies had Scaling on skin lesion in experimental group.

. According to study 5 % babies mild pain in experimental group. 50 % babies had moderate in control group and 50 % had moderate pain experimental group. 50% had severe pain in control group and 45% babies had severe pain in experimental group.

Table No. 3: Frequency and Percentage Distribution of Skin Condition After the Application of Egg White on Nappy Rash Among Babies in the Experimental Group.

N=20+20

Characteristics	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage

Temperature of skin	Normal	15	75%	0	0%
	Warm on touch	5	25%	8	40%
	Cold on touch	0	0%	12	60%
Colour of skin	Pink	20	100%	1	5%
	Red	0	0%	13	65%
	Bright red	0	0%	6	30%
Skin lesion	Blisters	20	100%	7	35%
	Macules	0	0%	7	35%
	Papules	0	0%	6	30%
Skin condition of rash	Erythema	1	5%	13	65%
	Scaling	19	95%	7	35%
Pain	Mild	20	100%	7	35%
	Moderate	0	0%	6	30%
	Severe	0	0%	7	35%

Result :

According to study 75% of babies had normal skin temperature in experimental group. 40% of babies had warm on touch in control group were as 25% babies had warm on touch in experimental group and 60% babies had cold on touch in control group.

- According to study 5% baby had pink skin colour in control group. 100 % babies had red colour skin in experimental group and 30 % babies had bright red skin colour in control group .

- According to study 35% babies had blisters on skin lesion in control group and 100% babies had blisters on skin lesion in experimental group. 35 % babies had Macules on skin lesion in control group , 6% babies had Papules on skin lesion in control group .

. According to study 65 % babies had Erythema on skin in control group and 5% babies had Erythema on skin in experimental group. 35 % babies had Scaling on skin lesion in control group and 95% babies had Scaling on skin lesion in experimental group.

. According to study 35 % babies mild pain in control group and 100 % babies mild pain in experimental control . 30 % babies had moderate in control group and 35% had severe pain in control group .

Table No. 4: Comparison of skin condition after application of egg white on nappy rash among the babies in experimental and control group.

Post- Test	Mean	S.D.	D.F.	t- value	p- value
Experimental Group	6.5	0.7608	19	8.7559	0.00001 < 0.05
Control Group	15.55	4.5592			

Result: A comparison of the skin condition after the application of egg white on nappy rash in both the experimental and control groups revealed the following results: the mean score for the skin condition in the control group was 15.55 with a standard deviation (S.D.) of 4.5592, while the mean score in the experimental group was 6.5 with an S.D. of 0.7608. The t-value calculated was 8.7559, and the p-value was 0.00001, which is less than 0.05 at the 5% level of significance.

DISCUSSION:

The aim of the current study was to assess the effectiveness of applying egg white in treating nappy rash among infants in selected pediatric units of hospitals. The distribution of demographic variables based on frequency and percentage is as follows:

In terms of age, 40% of infants in the experimental group were in the 0-1 month range, while 10% were in the control group. In the 2-6 month age group, 35% of infants were in both the experimental and control groups. For the 7-12 month age group, 25% were in the experimental group, compared to 50% in the control group. In the 18-month age category, 5% of infants were in the control group.

Regarding the duration of nappy use, 5% of infants in the control group wore nappies for 1 hour, 35% for 2 hours, and 20% of infants in the experimental group used nappies for 3 hours, with another 35% in the control group. For 4-hour nappy use, 35% were in the experimental group, and 25% were in the control group. In the 5-hour category, 35% of infants were in the experimental group, and 10% wore nappies for 6 hours in the experimental group. As for the type of nappy, all infants in both groups used cotton nappies.

Frequency and percentage distribution of skin condition before application of egg white on nappy rash among the babies in control group According to study 40% of babies had normal skin temperature in control group. 60% of babies had warm on touch in control group were as 20% babies had warm on touch in experimental group and 80% babies had cold on touch in experimental group. According to study 1% baby had pink skin colour in control group. 65% babies had red colour skin in control group were as 10% babies had red colour skin in experimental group and 30% babies had bright red skin colour in control group were as 90% babies had red colour skin in experimental group .

According to study 35% babies had blisters on skin lesion in control group and 5% babies had blisters on skin lesion in experimental group. 35% babies had Macules on skin lesion in control group and 50% babies had Macules on skin lesion in experimental group. 30% babies had Papules on skin lesion in control group and 45% babies had Papules on skin lesion in experimental group. According to study 65 % babies had Erythema on skin in control group and 45% babies had Erythema on skin in experimental group. 35 % babies had Scaling on skin lesion in control group and 55% babies had Scaling on skin lesion in experimental group. According to study 5 % babies mild pain in experimental group. 50 % babies had moderate in control group and 50 % had moderate pain experimental

group. 50% had severe pain in control group and 45% babies had severe pain in experimental group.

The frequency and percentage distribution of skin condition after the application of egg white for nappy rash among babies in the experimental group showed that 75% of the infants had a normal skin temperature. In comparison, 40% of babies in the control group had warm skin on touch, while 25% of babies in the experimental group had warm skin. Additionally, 60% of babies in the control group had cold skin on touch.

According to study 5% baby had pink skin colour in control group. 100% babies had red colour skin in experimental group and 30% babies had bright red skin colour in control group. According to study 35% babies had blisters on skin lesion in control group and 100% babies had blisters on skin lesion in experimental group. 35% babies had Macules on skin lesion in control group, 6% babies had Papules on skin lesion in control group. According to study 65% babies had Erythema on skin in control group and 5% babies had Erythema on skin in experimental group. 35% babies had Scaling on skin lesion in control group and 95% babies had Scaling on skin lesion in experimental group. According to study 35% babies mild pain in control group and 100% babies mild pain in experimental control. 30% babies had moderate in control group and 35% had severe pain in control group.

Comparison of skin condition after application of egg white on nappy rash among the babies in experimental and control group. According to day 3 (Evening), the mean score level of pain of skin condition after application of egg white in control group was 15.55, S.D. is 4.5592, mean score skin condition after application of egg white in experimental group was 6.5, S.D. is 0.7608 and t-value is 8.7559 and p-value is $0.00001 < 0.05$ (at 5% level of significance).

Conclusion:-

About 50% of infants develop nappy dermatitis, which accounts for 25% of visits to a primary care physician for dermatological problems in the first year of life. In India, infant nappy rash prevalence varies between 7% and over 40% to 35% in the first two years of life. By placing an egg white barrier between the diaper and the diaper area, this study hopes to protect infants from diaper rash.

The current study found that the p-value for nappy rash between the control and experimental groups was less than 0.005, indicating a significant difference in the post-test scores of both groups. Consequently, the null hypothesis is rejected. The application of egg white on nappy rash showed a significant improvement in the skin's pain levels in the post-test. This suggests that applying egg white to nappy rash in infants effectively improved the skin condition and reduced pain levels.

Appendices:

Code No:

Section I: Demographic Data

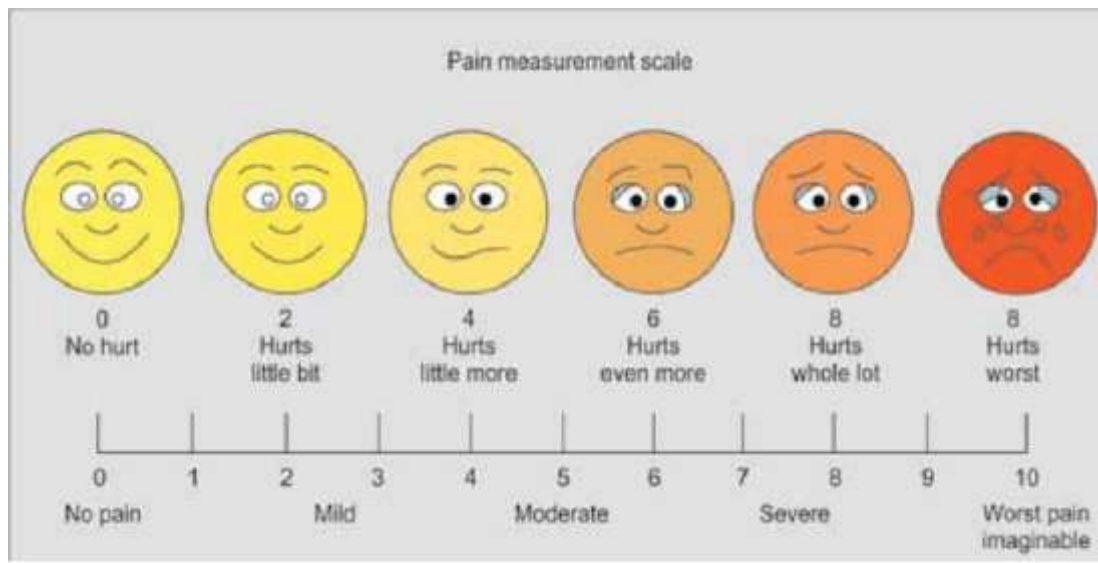
1. Age in Months:
2. Duration of Nappy Use:
 - 4-6 Hours
 - 6-8 Hours
 - 8-10 Hours
 - 10-12 Hours
3. Type of Nappy Used:
 - a) Cotton Nappy
 - b) Synthetic Nappy
 - c) Jelly Nappy

Section II: - Observation checklist

Sr. No	Characteristics		Score	Day 1	Day 2	Day 3

1	Temperature of skin	Normal	0			
		Warm on touch	1			
		Cold on touch	2			
2	Colour of skin	Pink	1			
		Red	2			
		Bright red	3			
3	Skin lesion	Blisters	1			
		Macules	2			
		Papules	3			
4.	Skin condition of rash	Erythema	1			
		Scaling	2			
5	Pain	Mild	1			
		Moderate	2			
		Severe	3			

Wong-Baker faces Pain rating scale



Author Contributions:

The authors have thoroughly reviewed and approved the final manuscript for publication and take full responsibility for all aspects of the work.

Concept and Design:

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Acquisition, Analysis, or Interpretation of Data:

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Drafting of the Manuscript:

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Critical Review of the Manuscript for Important Intellectual Content:

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