

Maternal Reported Care of Diaper Rash during Infancy Period: An Assessment Study

Esraa Ahmed Mohamed El Azab*, Dr. Wafaa El Sayed Owda**,
Dr. Safaa Salah Ismaiel***

* Clinical instructor of Pediatric Nursing, Faculty of Nursing/ Helwan University,

**Professor of Pediatric Nursing, Faculty of Nursing/ Ain Shams University,

*** Professor of Pediatric Nursing, Faculty of Nursing/ Helwan University

Abstract: Diaper rash is one of the most common skin conditions that infants suffer from and caregivers manage in the first month's post-birth. Aim of this study is to assess maternal reported care of diaper rash during Infancy Period. Design: Descriptive design was used. Sample: The study involved 100 infants and their accompanying mothers with diaper rash. Setting: Study was conducted at the out-patient pediatric clinics affiliated to Helwan Fever Hospital. Tools: Two tools were used in this study, 1st tool interviewing questionnaire sheet consisted of three parts: 1: Socio demographic characteristics of mothers and their infants, 2: Assessment of mothers' knowledge regarding diaper rash during infancy period, 3: Assessment of mothers' reported care regarding diaper rash during infancy period. The 2nd tool: checklist used to assess mothers' reported care regarding diaper rash during infancy period. Results of the present study revealed that more than half of the studied mothers (59%) had unsatisfactory level of knowledge and more than half of them (55%) had incorrect reported care regarding diaper rash during infancy period. Conclusion: The study concluded that The studied mothers had unsatisfactory level of knowledge and an incorrect reported care regarding diaper rash during infancy period. Recommendations: Periodic assessment of mothers' knowledge and reported care regarding diaper rash and its care of their infants.

Keywords: Infant, Diaper Rash, Skin, Infant Skin Care, Nursing.

1. INTRODUCTION

Infancy period considered as the most important and critical period for an infant's health, growth and development. Infancy period is defined as the time from 28 days to 24 months of age. Growth and developmental changes in the first two years of life are numerous. Physical growth, maturation of body systems, gross and fine motor skills progress in sequential fashion ⁽¹⁾.

The skin serves as a unique barrier from the outside world and undergoes critical changes during skin development and maturation. The skin or integument is much more than a simple wrapping around body and an active and versatile organ which is waterproof. So that the body don't dry up in the heat or melt in the rain. Skin protect body from the damaging radiation of sunlight and an organ of the integumentary system that made up of multiple layers of ectodermal tissue and guards the underlying muscles, bones, ligaments and internal organs ⁽²⁻³⁾

Skin is not just the largest, but also one of the most important organs of human body since skin performs an array of various significant functions. As an organ, the skin provides essential functions for survival and can be an indicator of overall infant's health. Abnormalities in the skin may be extremely distressing to parents ⁽⁴⁾.

Diaper rash (DR) is one of the most common dermatoses in infants caused by directly or indirectly wearing of wet diapers. The DR also called diaper dermatitis and can refer to an inflammatory reaction of the skin in the area covered by a diaper. Also the DR is a non-immunologic response to a skin irritant that results in skin cell hydration disturbance and can lead to frequent hospital visits and cause discomfort to infants and parental anxiety ⁽⁵⁾.

Diaper rash is one of the most common skin disorders in infants, including the buttocks, perianal area, genitals, inner thighs and waistline, with a prevalence between 7% - 50%. However, the real incidence of DR in the pediatric population might be higher because not all cases are reported to the physician as diaper rash usually resolve within a few days without the need for medical treatment. The DR often occurs in infants before toilet training is complete, particularly from 9 to 12 months of age, the incidence is higher in bottle-feed than in breast-feed infants ⁽⁶⁾.

The three most common types of DR include chaffing dermatitis, irritant contact dermatitis and diaper candidiasis. The most common presentation is an irritant contact dermatitis, which is a common condition among infants, caused by the combination of wearing nappies (diapers) and incontinence of urine and feces. The condition is common with a prevalence of 25% by 4 weeks of age and most infants will experience at least mild irritant contact dermatitis during the first 2 years of life ⁽⁷⁾.

The most common rash of the diaper area caused by a combination of factors such as: extended periods of wetness and urine in the diaper, friction, excessive hydration, varying power of hydrogen (PH) and mechanic abrasion both of which are highly irritant to the skin. The affected diapered skin is characterized by redness, hotness and dryness ⁽⁸⁾.

Although rashes within the diaper area are most often just simple cases of irritant contact dermatitis, which are easily treated by topical treatment and parental education on proper diapering practices, severe forms of DR require medical attention. Appropriate skin care can help in the prevention of diaper Rash ⁽⁹⁾.

The mother is usually the main caregiver for the infant. Mother is the one who keeps the infant's skin stay healthy by preventing soreness. Great care has to be taken to establish a routine to maintain infant's skin healthy and hygienic whether at home or in health center setting. Mothers's knowledge and practice about infant care play an important role in preventing and management of diaper rash ⁽¹⁰⁾.

Nurses play an important role in educating mothers about appropriate diaper care to prevent occurrence of DR and provide essential management of DR. The key to prevent and manage DR is knowledge of its etiology and elimination of causative factors. Thus, an important factor in the prevention and treatment of diaper rash is parental education and support that involves; general skin care measures (eg, frequent diaper changing, air exposure, gentle cleansing, choice of diapers and use of topical barrier preparations) and specific skin care measures such as wash infants' clothes separately from family clothes using a mild soap, rinse well and frequently, maintain dryness, reduce friction and limit exposure to irritants like urine and feces ⁽¹¹⁾.

Significance of study

Inflammation caused by diapers is one of the most common skin diseases in infants all over the world. Untreated DR can cause infection, skin abscess, septicemia and ulcers ⁽¹²⁾. The DR is a very common condition, affecting one in four infants under the age of 2 years. Peak prevalence occurs between 9 and 12 months of age without a sex predilection ⁽¹³⁾. From the researcher own personal experience in the field of pediatric care, diaper rash is very common and has negative effects on infant, that can affect the infant's sleep, play and breastfeed. Therefore, it's important to shed light on maternal reported care of diaper rash during infancy period.

Aim of the study:

The study aimed to assess maternal reported care of diaper rash during infancy period.

Research question:

- 1) What are the predisposing factors of diaper rash during infancy period?
- 2) What are the mother's knowledge regarding diaper rash during infancy period?
- 3) What are the mother's reported care regarding diaper rash during infancy period?
- 4) Is there a relation between characteristics of the mothers and their knowledge and practice regarding diaper rash?

2. SUBJECT AND METHOD

Research Design:

A descriptive research design was used in the study.

Setting:

The study was conducted at the out-patient pediatric clinics affiliated to Helwan Fever Hospital.

Sampling:

Type of the sample:

Simple random sample was used in the study, at the out-patient pediatric clinics affiliated to Helwan Fever Hospital attending infants and their accompanying mothers were selected randomly.

Sample size:

100 infants and their accompanying mothers at the out-patient pediatric clinics affiliated to Helwan Fever Hospital.

Tools for data collection:

Data collected by using two tools:

1st tool: Interviewing Questionnaire Sheet that were developed by the investigators included three parts: -

Part I: Characteristics of the studied mothers namely: age, educational level, occupation, residence, family monthly income and size of the family.

Part II: Characteristics of the studied infants namely: age, gender, diagnosis, ranking and type of feeding.

Part III: Mothers' knowledge regarding diaper rash, namely: definition, signs and symptoms, predisposing factors, types, complications, treatment and mother's care.

Scoring system

According to mothers' answers, a scoring system was followed to obtain the outcome of the mothers' knowledge, where each question had 2 degree for complete correct answer, incomplete correct answer with 1 degree and wrong answer with zero degree. The total number of questions was 43 question with total score of the knowledge 86 grades (equal 100%). The studied mothers' answers were checked using a model key answer and accordingly their knowledge was categorized into either satisfactory knowledge (60% or more) or unsatisfactory knowledge score less than 24 grades (less than 60%).

2nd tool: Check lists adapted from ⁽¹⁴⁾.

It was used to assess mother's reported care of diaper rash, namely: hand washing, using of barrier cream, using of warm water and soap.

Scoring system

The check list of diaper rash was composed of 13 steps with 39 degree and divided into three categories of answers. Mothers' reported care was divided into done complete correct with 2 degree or done incorrect with 1 degree or not done with zero degree, if maternal reported care > 60% it was considered correct care and when maternal reported care was ≤ 60% it was considered an incorrect care.

Content validity:

The used study tools were revised for clarity, relevance, understanding and applicability by a panel of 3 pediatric nursing experts from the Faculty of Nursing, Helwan University and Faculty of Nursing, Ain-Shams University to assess the content validity of the study tools. The opinions of the experts were elicited regarding the format, layout, consistency, accuracy and relevancy of the tools and the necessary modifications were done accordingly.

Tool reliability:

To assess reliability, the study tools (knowledge, effect and attitude) were tested by the pilot subjects for calculating Cronbach's Alpha which was 0.874 for the knowledge questionnaire, 0.851 for the reported care checklist.

Pilot study:

A pilot study was carried out including 10% of the studied mothers accompanying their infants (10 mothers) at the previously mentioned setting to test the applicability, feasibility, practicability, relevance and clarity of the tools used and to determine the needed time for the application of the study tools. The mothers who were included in the pilot study were included to the sample because no modification was done after conducting pilot study.

Fieldwork:

The actual field work of data gathering was 6 months period starting from the first of October 2019 to the end of March 2020. At the beginning, the researcher introduced herself to the studied mothers and explained the purpose of the study to gain their cooperation.

The data collected through interview with each mother individually for 10-20 minutes to assess their knowledge and reported care toward their infants with diaper rash. The researcher was available two days per week from 9 a.m to 2 p.m in the previously mentioned settings.

Ethical consideration

Approval from the Ethical Committee of Scientific Research in Faculty of Nursing-Helwan University was obtained. Verbal Consent was obtained from each mother who accepts to participate in the study. Every mother has the right to withdraw from the study at any time without giving any reasons. The studied mothers were assured that the collected data would be treated confidentially and that it would be used for the purpose of the study only. The purpose of the study was simply explained to the mothers who agree to participate in the study prior to data collection. The researcher assured maintaining anonymity and confidentiality of the subject's data.

Statistical item:

The gathered data were organized, tabulated and statistically analyzed using the Statistical Package for Social Sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA) to assess mothers' level of knowledge and reported care regarding diaper rash during infancy period. Data were presented in tables and graphs. Quantitative data were expressed as $\bar{x} \pm SD$. Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.
- Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables
- The confidence interval was set at 95% and the margin of error accepted was set at 5%. So, the p-value was considered significant:

Probability (P-value):

- P-value >0.05 was considered insignificant.
- P-value <0.05 was considered significant.
- P-value <0.001 was considered as highly significant.

3. THE RESULTS

Table (1): presents mothers' characteristics. It showed that about one third (32%) of the studied mothers were in the age group of $20 < 25$ years with ($\bar{x} \pm SD = 29.82 \pm 5.68$ year). More than one third (39%) of them graduated from secondary school. More than half (58%) of them were working.

Figure (1): shows that more than half of the studied mothers (55 %) had incorrect reported care. Less than half (45 %) of them had correct reported care regarding diaper rash during infancy period.

Table (2): presents that 60% of them had not enough family income monthly. As regards family size, more than three quarters (77%) had from 3 < 5 members and most of them (82%) were from urban residence.

Table (3): Illustrates that more than half (56.0%) of the studied infants were males in the age group 6 to less than 18 months. Furthermore, more than a third (44%) of them were ranked as the first infant for the family. In terms of feeding type, more than two thirds (70%) of the studied mothers were exclusively breastfed.

Table (4): reveals that 80% of the predisposing factors of diaper rash were unchanging wet / soiled diapers for long period on infant’s skin and constant friction of wet diapers in the diaper area (48%).

Table (5): clarifies that more than half of the studied mothers (59 %) had unsatisfactory knowledge level, while less than half (41 %) of them had satisfactory knowledge regarding diaper rash during infancy period.

Table (6): presents that there were highly statistically significant correlation between total score of mothers’ knowledge and their total score of reported care regarding care of diaper rash during infancy period. It reveals that there is a positive correlation between total score of knowledge and total score of reported care (p-value<0.001).

Table (1): Number and percentage distribution of the studied mothers according to their characteristics (n=100).

Mothers’ Characteristics	No.	%
Age in (years)		
20: < 25	32	32.0
25: < 30	28	28.0
30: < 35	26	26.0
35: < 40	14	14.0
$\bar{x}\pm SD$	29.82±5.68	
Educational Level		
Illiterate	10	10.0
Read and write	15	15.0
Secondary education	39	39.0
University	36	36.0
Occupation		
Working	58	58.0
House wife	42	42.0

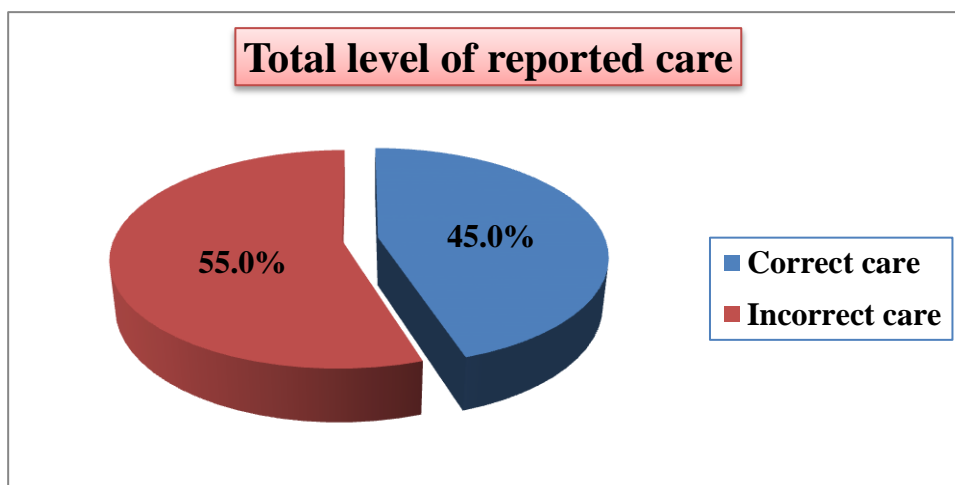


Figure (1): Percentage distribution of the studied mothers regarding their total level of reported care regarding diaper rash during infancy period.

Table (2): Number and percentage distribution of the studied mothers according to their family characteristics (n=100).

Family Characteristics	No.	%
Family Income (monthly)		
Enough	40	40.0
Not enough	60	60.0
Family Size		
< 3	15	10.0
3: < 5	77	77.0
5: ≤ 7	8	8.0
Residence		
Urban	82	82.0
Rural	18	18.0

Table (3): Number and percentage distribution of the studied infants according to their characteristics (n=100).

Infants' Characteristics	No.	%
Age (in months)		
< 6	18	18.0
6: < 18	56	56.0
18: ≤ 24	26	26.0
$\bar{x} \pm SD$	11.45 ± 2.10	
Gender		
Male	56	56.0
Female	44	44.0
Infant Ranking (in family)		
First	44	44.0
Second	24	24.0
Third	22	22.0
Fourth and more	10	10.0
Type of Feeding		
Exclusive breast feeding	70	70.0
Artificial feeding	12	12.0
Complementary feeding	18	18.0

Table (4): Number and percentage distribution of the studied mothers' knowledge regarding predisposing factors of diaper rash (n=100).

Items	No.	%
Predisposing factors of diaper rash: *		
Unchanging wet/soiled diapers for long period on infant's skin	80	80.0
Constant friction of wet diapers in diaper area	48	48.0
Using of wipes to clean diaper area	38	38.0
Using of potash for washing diapers	2	2.0
Using of powder	18	18.0
Using of plastic pants	6	6.0
Changing in mother's diet	10	10
Mothers taking antibiotics	3	3
Using soap with a high percentage of chemicals to clean infant's skin	2	2.0
Introducing of new foods for infant	4	4.0
Sudden changing in the type of disposable diaper	8	8.0
Artificial feeding	10	10

*Total number not mutually exclusive

Table (5): Number and percentage distribution of the studied mothers according to their total level of knowledge regarding diaper rash during infancy period (n=100).

Total level of knowledge	No.	%
Satisfactory	41	41.0
Unsatisfactory	59	59.0
Total	100	100.0

Table (6): Correlation between total score of knowledge and total score of reported care regarding care of diaper rash during infancy period (n=100).

Total score of reported care	Total score of knowledge	
	r	p-valued
	0.865	<0.001**

**p-value <0.001 HS

4. DISCUSSION

Diaper rash is one of the most common skin disorders in infants, including the buttocks, perianal area, genitals, inner thighs and waistline, with a prevalence between 7 % and 50%. However, the real incidence of DR in the pediatric population might be higher because not all cases are reported to the physician as diaper rash usually resolve within a few days without the need for medical treatment. Factors associated with greater risk of DR include frequency of diaper soiling, diarrhea, previous stomach upset, prolonged wetness due to a low frequency of diaper changes and lack of barrier cream⁽⁶⁾. So, this study aimed to assess maternal reported care of diaper rash during infancy period.

Regarding predisposing factors of diaper rash, the results of the present study showed that, the majority of the studied mothers had correct knowledge regarding unchanging wet / soiled diapers for long period on infant’s skin and constant friction of wet diapers in the diaper area. These findings were in an agreement with the study findings by⁽¹⁵⁾, entitled "Non-pharmacological solution to prevention of diaper rash in infants", who clarified that the majority of the predisposing factors of diaper rash were leave soiled diaper for a long period directly on an infant’s skin.

However, this finding contradicted with⁽¹⁶⁾, entitled "Microbes in Diaper Dermatitis and their Clinical Significance in Management" who revealed that the major cause of diaper rash was microbial infections. From the researcher point of view, predisposing factors depends on different perception from mother to another.

Concerning total level of knowledge of the studied mothers about diaper rash during infancy period, the findings of the current study revealed that more than half of the studied mothers had unsatisfactory knowledge level about diaper rash during infancy period, while less than half had a satisfactory level.

This came into agreement with⁽¹⁷⁾, who carried out a study to assess mothers’ knowledge about diaper rash and preventive measures in Bangladesh and founded that the about half of infants whose mothers had knowledge of the causes and preventions of diaper rash and/or who received information about the importance of the proper cleaning of the diaper area during diaper changes suffered fewer incidents of diaper rash than those whose mothers did not. From the researcher point of view this could be due to low educational level of the studied mothers.

Concerning total level of reported care of the studied mothers about diaper rash during infancy period, the findings of the current study revealed that more than one half of the studied mothers had incorrect care, while less than half of them had correct care regarding diaper rash during infancy period. The current study findings came in agreement with those of⁽¹⁷⁾, in Turkey entitled" Safety evaluation for ingredients used in infant care products: Consideration of diaper rash" where more than half of the study mothers had an incorrect care level of practice regarding diaper care.

On the other hand, this finding contradicts with⁽¹⁷⁾, entitled "Mothers’ Knowledge about Diaper Rash and Preventive Measures in Bangladesh" who revealed that more than three quarters of the studied mothers had a correct care level of practice regarding diaper care. From the researcher point of view, this may be due to lack of awareness and low educational level of the studied mothers.

5. CONCLUSION

Based on the present study and research questions it can be concluded that:

The result of the study supported the questions of the study: that the predisposing factors of diaper rash were leaving wet / soiled diapers for a long time on the infant's skin. In addition, it was found that the studied mothers had unsatisfactory knowledge level and incorrect reported care regarding diaper rash. Moreover, there were highly statistically significant relation between total level of mothers' knowledge and their total level of reported care regarding diaper rash during infancy period.

6. RECOMMENDATIONS

The study recommended that:

Based on the findings of the present study the following recommendation can be made:

- Assessment of predisposing factors of diaper rash during infancy period.
- Early detection of diaper rash in infant.
- Support mothers in providing care of diaper rash for their infants.
- Periodic assessment of mothers' knowledge and practice regarding diaper rash and its care.
- Conducting programs based on the actual needs assessment of mothers regarding care of diaper rash during infancy period.
- Further researches including larger sample size for generalization of the study findings.
- Strengthening the role of the nurse in educating mothers at antenatal and postnatal period regarding appropriate care for the diaper area.
- Enhancing prevention rather than treatment through upgrading awareness of mothers regarding care of diaper rash.

REFERENCES

- [1] **Reynolds, G. and Romano, A. C. (2016).** The development of attention systems and working memory in infancy, *Frontiers in Systems Neuroscience*, 20(4):10-15.
- [2] **Sarkar, S., (2018).** Pediatric Nursing As per INC Syllabus, 1st ed., Jaypee Brothers Medical Publishers, London, chapter 11, The infant and skin conditions, Pp 546- 550.
- [3] **Chadha, A. and Jahnke, M. (2019).** Common neonatal rash, *Pediatric Annals*, 48(1):16-22.
- [4] **Marilyn, J. H. and David, W. (2015).** Wong's nursing care of infants and children, 10th ed., El Sevier, chapter 10, Health promotion of the infant and family, P413.
- [5] **Owa, A., Oladokun, R. and Osinusi, K. (2016).** Diaper dermatitis among children in Ibadan, Nigeria: Frequency and predisposing factors. *European Journal of Pediatric Dermatology*, 26(3): 246-250.
- [6] **Cohen, B. (2017).** Differential diagnosis of diaper dermatitis, *Clinical Pediatrics Journal*, 56(5): 16-22.
- [7] **Blume-Peytavi, U. and Kanti, V. (2018).** Prevention and treatment of diaper dermatitis, *Pediatric Dermatol*, 35: s19-s23.
- [8] **Gao, W., Lin, W., Grewen, K. and Gilmore, J. (2017).** Functional connectivity of the infant human brain: plastic and modifiable, *The Neuroscientist*, 23(2):169-184.
- [9] **Atherton, D. J. (2016).** Understanding irritant napkin dermatitis, *International Journal Dermatol.*, 1(55): 7-9.
- [10] **Addyman, C. and Mason, L. (2016).** Researching cognitive development in infancy. In J. prior and J. Van Herwegen (Eds.), *Practical research with children* (pp. 3-32). Routledge/Taylor and Francis Group.

International Journal of Novel Research in Healthcare and NursingVol. 9, Issue 1, pp: (192-200), Month: January - April 2022, Available at: www.noveltyjournals.com

- [11] **Zheng, M., Lamb, K. E., Grimes, C., Laws, R., Bolton, K., Ong, K. K. and Campbell, K. (2018).** Rapid weight gain during infancy and subsequent adiposity: a systematic review and meta-analysis of evidence, *Obesity Reviews*, 19(3): 321-332.
- [12] **Sharifi-Heris, Z., Amiri Farahani, L. and Hasanpoor-Azghadi, S. (2018).** A Review study of diaper rash dermatitis treatment, *Journal of Client-Centered Nursing Care*, 4(1): 1-12.
- [13] **Reich, D., Psomadakis, C. and Buka, B. (2017).** Diaper dermatitis. in top 50 dermatology case studies for primary care (pp. 191-198). Springer, Cham.
- [14] **Greenberg, C. and Vicky, R. (2012).** Pediatric nursing Procedures, chapter 74, *New born Care: Immediate needs of the stable newborn*, 3rd ed., El Sevier, China, Pp. 493-495.
- [15] **Janoušková, K. and Sikorová, L. (2019).** Non-pharmacological solution to prevention of diaper rash in infants, *Pediatric Dermatology*, 27(8): 1–8.
- [16] **Naik, P. (2021).** Microbes in diaper dermatitis and their clinical significance in management, *Journal of Dermatology Research Reviews and Reports*, 8(2), 127: 3.
- [17] **Zahir Sadique , Nurunnahar Fatema Begum , Md. Ferdousur Rahman Sarker , Nazmul Islam Bhuyian , Kamruzzaman., (2020).** Mothers' knowledge about diaper rash and preventive measures in Bangladesh, *DS (Infant)*.
- [18] **Susan P. Felter, Andrew N. Carr, Tingting Zhu, Taryn Kirsch, Gloria Niu, (2017).** Safety evaluation for ingredients used in infant care products: Consideration of diaper rash, *Regulatory Toxicology and Pharmacology*, 90: 214-221.