








Understanding diaper dermatitis: What parents of 0-36 month olds need to know and the key factors influencing it's development

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Abstract

Objective: Diaper dermatitis, commonly known as diaper rash, is a frequent skin concern for families with infants. This study explores the knowledge levels of parents with children aged 0-36 months regarding diaper rash and the factors influencing its development.

Methods: The survey-based study involved 300 parents who participated in a survey designed to measure their knowledge and attitudes about diaper rash. The survey also inquired about their babies' diaper care routines and preferred sources of information on diaper rash.

Results: A positive correlation was found between the education levels of the parents and knowledge of diaper rash. Parents with university degrees had a higher median awareness score [9 (3-12)] compared to parents with high school [8 (4-12)] and primary school diplomas [7 (3-12)] ($p=0.009$ and $p<0.001$, respectively). Interestingly, parents whose children experienced diaper rash within the past 3 months displayed a slightly lower median awareness score [8 (3-12)] compared to those without recent experience [9 (3-12)] ($p=0.009$). The use of wet wipes did not show a significant association with diaper rash occurrence ($p=0.898$). Creams emerged as the most common treatment method for diaper rash. The primary source for obtaining these creams was doctor recommendations.

Conclusion: This study suggests a link between parental knowledge of diaper rash and its frequency. The development of educational programs for parents could be a valuable strategy in preventing diaper rash.

Keywords: Diaper dermatitis; diaper rash; parental knowledge; infant care

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Introduction

Diaper dermatitis (DD), commonly known as diaper rash, is an inflammatory reaction of the skin in the genital and perianal areas (diaper area) [1]. It is particularly prevalent during the 9–12-month period and often presents as irritant contact dermatitis. Candida infection, seborrheic dermatitis, and psoriasis can also cause diaper rash [2]. Increased moisture, pH rise, prolonged contact with urine or feces, and detergents all contribute to the development of irritant substances [1]. Several factors contribute to diaper rash formation, including fungal infections, irritation from wet wipes, sensitive skin, maternal diet during breastfeeding, and antibiotic use. Diaper dermatitis is the most common skin problem encountered during infancy. The majority of children are expected to experience at least one episode before toilet training [3]. Clinical signs vary with disease severity. Bright erythema, scaly papules, and superficial erosions are more common, while pseudo verrucous papules are less frequent. The rash typically occurs in areas with the most diaper contact, such as the convex surfaces of the buttocks, inner thighs, mons pubis, scrotum, and labia majora. Intertriginous areas are generally spared [4]. Treatment varies depending on dermatitis severity, but preventive measures are the first step. Increasing diaper change frequency and using super-absorbent diapers are effective methods [5]. Preventive measures and treatment include ventilation of the diaper area, effective cleaning, barrier creams, and parental education [6]. Diaper dermatitis is a common problem for babies in the first months after birth, requiring proper parental management. Therefore, parental knowledge is crucial for effective prevention and treatment [6]. This study aimed to investigate the knowledge levels of parents with children up to 36 months old regarding diaper dermatitis and to identify factors causing it.

Materials and Methods

All procedures of this survey-based study were conducted in accordance with the dictates of Helsinki declaration and the research protocol was approved by Balıkesir University, Ethics Committee of Non-Interventional Researches (Number: 327258-2023/129).

A self-administered questionnaire was developed using Google Forms, consisted of validated questions to assess parents' knowledge and attitudes about diaper dermatitis. The questionnaire was developed after reviewing relevant literature.

The study recruited a total of 300 parents with children aged 0-36 months who visited the dermatology

outpatient clinics of three tertiary institutions between December 25, 2023, and January 31, 2024.

The questionnaire included:

- Sociodemographic characteristics of the parents
- Birth method of the children
- Health status of the children
- Feeding methods of the children
- A three-response Likert-type test measuring parental knowledge about diaper dermatitis
- Questions about the diaper care routine applied to the children
- Sources of information utilized by the parents

Statistical Analysis

Descriptive data were presented as number (percentage) and mean \pm standard deviation. Awareness score data were presented as median (min-max). Assuming a normal distribution based on the central limit theorem (due to the sample size of 300 parents), student T-tests were used to compare awareness scores between parents whose children had experienced diaper rash in the last 3 months and those who had not. One-way ANOVA was employed to compare awareness scores by education level, with Levene's test for homogeneity of variance and Tukey's test for post hoc analysis. Categorical variables were analyzed using the chi-square test.

All statistical analyses were performed using the SPSS (SPSS Inc., Chicago, IL, USA) software. A p-value less than 0.05 was considered statistically significant.

Results

Epidemiological Data

A total of 300 parents were reached. All participants were females (mothers). The mean age of the parents was 31.5 ± 5 (18-45). The mean age of the children was 15.3 ± 10 (1-36) months. The number of babies who had diaper dermatitis in the last 3 months was 197 (65.6%). A total of 156 (52%) children were breastfed, while 144 (48%) were fed with cow's milk and formula. There were 94 (31.3%) children born by normal vaginal delivery, while 276 (91.6%) children were born at term.

Median Awareness Score

The median awareness score, measured by a three-response Likert-type test, was higher among university

graduate parents [9 (3-12)] compared to high school [8 (4-12)] and primary school graduates [7 (3-12)] ($p=0.009$ and $p<0.001$, respectively). The median awareness score of parents whose children had experienced diaper dermatitis in the last 3 months [8 (3-12)] was significantly lower than that of parents whose children had not [9 (3-12)] ($p=0.009$).

Likert Test Responses

Diaper Change Routine

The practices in the diaper change routines of the parents were given in **Table 1**. In total, 207 (73%) parents used wet wipes, 146 (46%) used cream during diaper changes,

Table 1: Practices of the parents in diaper changing routine

Diaper changing routine	n (%)
Using wet wipes	207 (73%)
Applying cream	13 (46%)
Washing with water	125 (41.6%)
Using cotton	74 (24.6%)
Air drying	56 (18.6%)
Applying olive oil	19 (6.3%)

and 125 (41.6%) cleaned the diaper area with water. A total of 111 (37%) parents stated that washing the baby's bottom with soap was the best method of cleaning, while 201 (67%) parents believed that the baby's or mother's diet could cause diaper rash. Forty parents (42.3%) stated that an antifungal cream should always be used in the treatment of diaper rash, and 34 (11.3%) parents believed that powder should be used during every diaper change. The most commonly used methods during diaper rash episodes were presented in **Table 2**. A total of 224 (74.6%) parents used cream, while 116 (38.6%) used olive oil. In the event of diaper rash, 103 (34.3%) parents changed the diaper brand, while 25 (8.3%)

Table 2: Methods used when diaper dermatitis occurs

Methods	n (%)
Cream	224 (74.6%)
Olive oil	116 (38.6%)
Trying a different brand of diapers	103 (34.3%)
Trying a different brand of wet wipes	25 (8.3%)
Using baby powder	20 (6.6%)

parents changed the brand of wet wipes. The sources for choosing creams for diaper dermatitis were shown in **Table 3**. A total of 224 (74.6%) parents bought creams based on doctors' recommendations, 51 (17%) based on internet research, 38 (12.6%) based on pharmacists' recommendations, and 25 (8.3%) based on the advice of relatives and neighbors. The frequency of diaper rash in the last 3 months was similar between the parents used wet wipes and those who did not ($p=0.898$).

Discussion

The diaper area requires meticulous cleaning due to skin folds, sensitive skin composition, and elevated pH levels. Water and cloth/cotton wipes, or wet wipes, are the most common cleaning methods employed. While water and cloth/cotton offer a natural and gentle clean, wet wipes provide practicality and superior effectiveness in removing stool's fat content. Therefore, wet wipes present a convenient cleaning option. Previous studies in the literature corroborate our findings, reporting wet wipes as the most frequently used method for cleaning this area [7-9].

Table 3 Responses to the question 'Who recommended your diaper rash cream?'

Resource	n (%)
Doctor	162 (54%)
Internet	51 (17%)
Pharmacy	38 (12.6%)
Relatives/Neighbors	25 (8.3%)

The current study identified wet wipes as the predominant diaper area cleaning method, used by 73% of participants. However, we observed no significant difference in diaper dermatitis rates between those using wet wipes and those who did not. Similar to our findings, Adalat et al. also reported no significant association between cleaning methods and diaper dermatitis [7]. Furthermore, studies comparing alcohol-free wet wipes with water-cotton for diaper area cleaning found no significant discrepancies in terms of trans epidermal water loss, erythema, skin moisture, and pH levels [4, 10]. The absence of an association between wet wipe use and diaper dermatitis development in the current study might be attributable to the lack of alcohol and derivatives in the wet wipes used, which can cause contact dermatitis and alter pH levels. While Adalat et al. identified an inverse association between diaper change frequency and diaper dermatitis incidence in their study, we did not observe a correlation between diaper change

frequency and the occurrence of diaper dermatitis within the last three months in our participants [7]. This discrepancy could be attributed to a sufficiently high diaper change frequency even among the least frequent group in the current study.

Many parents turn to traditional methods for treating diaper rash. In the current study, 116 parents (38.6%) reported using olive oil when a rash developed. Biltekin et al. also documented olive oil as the most common traditional practice for diaper dermatitis treatment, with a prevalence of 56% [11]. However, literature suggests that olive oil disrupts the skin barrier and potentially induces dermatitis [12]. Nevertheless, we did not find a correlation between olive oil use and diaper dermatitis development in the current study.

An analysis of parental responses regarding diaper dermatitis knowledge revealed that parents with university degrees possessed a higher median awareness score compared to parents with high school and primary school education. Prior studies have also shown a lower incidence of diaper dermatitis in babies of mothers with higher education levels [13]. This suggests that education fosters improved awareness and access to accurate information about diaper dermatitis.

Inquiring the participants about the source of recommendations for diaper creams revealed that 162 parents (54%) indicated following doctor's recommendations, while 51 parents (17%) reported relying on online research. A previous study by Arikan et al. reported that parents primarily purchased diaper creams based on pharmacist recommendations, with only 15.8% relying on doctor recommendations [13]. This variation might be attributed to regional differences, evolving parental awareness over time, and the growing influence of the internet.

Conclusion

Diaper dermatitis, a frequent and preventable childhood condition, can lead to unnecessary healthcare visits, causing strain on both time and resources. The current study revealed a positive correlation between parental knowledge levels and educational attainment regarding diaper dermatitis.

Like the successful promotion of breastfeeding through baby-friendly initiatives, a targeted diaper dermatitis education program could be implemented. This program should prioritize parents with primary and secondary education backgrounds. By enhancing parental

awareness, we can potentially decrease the incidence of diaper dermatitis and promote the responsible utilization of healthcare services.

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Ethical Declaration: Ethics approval for the study was obtained from the Non-Interventional Clinical Research Ethics Committee of Balıkesir University with decision number 2023/129

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