

Mothers Knowledge and Home Management of Nappy Rash in Port Harcourt, Nigeria

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ABSTRACT

BACKGROUND

Nappy rash is thought to affect up to a third of nappy-wearing babies at any given time. It is not a disease but just an irritation of the skin which when severe, becomes painful and distressing for the infant, and a source of great anxiety for caregivers. This study evaluated the knowledge and home management of nappy rash amongst mothers in Port Harcourt

METHODS

A cross-sectional study of mothers presenting with children aged 2 years and below to the Paediatric Outpatient Clinics of the University of Port Harcourt Teaching Hospital. A structured, anonymous, self-administered questionnaire was used to obtain information on biodata, awareness information, response and practices. Data were analysed using SPSS version 17.0.

RESULTS

A total of 141 mothers participated in the study. Seventy-five (53%) of them had post secondary education. Disposable diapers only were used by 45% of respondents, 10% used cloth napkin only. Level of education significantly affected type of diaper used ($P=0.002$). Baby's diaper was changed 3 times during the day and once at night by 41%. Most mothers (80%) regularly applied Vaseline on baby's bottom, 14% applied powder. In the preceding 6 months, 34% of babies had nappy rash with the number of episodes varying from 1 to 5. Most respondents (73%) applied anti-fungal

cream to the rash, only 10% exposed the bottom.

CONCLUSIONS

Knowledge of, and home treatment of diaper rash is poor amongst our mothers. There is need for awareness/enlightenment campaigns about skin care of young children targeted at mothers.

Keywords: Mothers knowledge; Home care; Nappy Rash; Diaper; Napkin,

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INTRODUCTION

Irritant diaper dermatitis, commonly known as nappy or diaper rash, can be regarded as the prototype of irritant contact dermatitis, which is a generic term applied to skin rashes in the diaper area that are caused by various skin disorders and/or irritants[1,2]. It is the most common dermatitis found in children below 2 years of age with a peak age of 8 to 12 months [3,4] and a frequent cause of great anxiety, especially for new parents.

Despite the word "diaper" in the name, the dermatitis which is mainly seen on the convex surfaces in close contact with the diaper, including the buttocks, genitalia, lower abdomen, and upper thighs with the skin folds spared, is not due to the diaper itself, but to the materials trapped by the diaper, usually urine and feces. As a reaction to over hydration of the skin, friction, maceration, and prolonged contact with urine and feces, the skin of the diaper area may become erythematous and

scaly, often with papulovesicular or bullous lesions, fissures, and erosions[2].

Most nappy rashes are mild and can be cured with simple skin care routine or a change in diapering practices. Some however, may be severe and associated with fungal or bacterial infection. They then become painful and distressing to the baby, and require treatment with medication [2, 3].

The actual incidence of this condition is likely underestimated if office visits are used as the screening site because fewer than 10% of all diaper rashes are reported by the family [3].

However, despite being a very common condition thought to affect up to 35% of nappy-wearing babies at any given time [3,5] there is dearth of data on its prevalence in developing countries, including Nigeria. This study evaluated the knowledge and home management of nappy rash amongst mothers in Port Harcourt.

METHODOLOGY

This study was carried out over a one month period (November 2011), amongst mothers who presented with infants and young children, aged 2 years and below, to the Paediatric Outpatients Clinics of the University of Port Harcourt Teaching Hospital (UPTH), which serves as a general/referral centre for neonates and children in Port Harcourt and its environs. It also offers primary health care services as patients can and do walk in for consultation and treatment. Mothers who gave consent participated in the study. The instrument used to obtain information was a closed-ended, anonymous and self-administered questionnaire which was administered and retrieved immediately after filling to avoid bias. Data collected included bio data, awareness information, and assessment of current diapering practices (e.g. change frequency, type of diapers used, creams or ointments applied, methods used to clean the diaper area). To assess frequency of nappy change, day time was considered to cover the period between 6 am and 9 pm and night time between 10 pm and 5 am. Respondents could

tick more than one option per question. Those who had difficulty reading or writing were assisted by one of the investigators.

Data were entered into a Microsoft Excel Spread Sheet and analyzed using SPSS version 17.0. Chi-Square test was used to test for significance. P values < 0.05 were considered significant. Results are presented using tables and texts.

RESULTS

Out of the 141 mothers who participated in the study, 67 (47.5%) belonged to the 20-29 years age bracket and 66 (46.8%) to the 30-39, while 57 (40.4%) had secondary education and 75 (53%) post secondary (Table 1).

Table 2 shows that 48 babies had nappy rash in the last 6 months preceding the study, giving a prevalence of 34%, with the number of episodes varying from 1(66.6%) to 5 (2%)

Table 3 shows the type of napkin used with regard to mothers' educational level. Only 10.6% of respondents did not use disposable diapers for their babies while as many as 44.7% of them used disposable diapers only and same proportion used both cloth and disposable ones. More than half of respondents in the later group had secondary education. Sixty percent of mothers with post secondary education used disposable diapers only. Level of education significantly affected type of diaper used ($p=0.002$).

Table 4 shows that more than half of the babies who had a rash within the 6 months preceding the study used both cloth and disposable diaper while the majority of those who did not have rash used only disposable diaper.

Most of those who had rash as well as most of those who did not have rash were amongst babies whose nappies were changed 3 times during day time. Also, most respondents 58 (41%) changed baby's diaper/napkin once at night.

Table 5 summarises the routine care of nappy area. Most of the respondents (75%) cleaned baby's bottom with Baby wipes after a bowel movement while only 31 (22%) and 15 (10.6%) used water and tissue paper respectively. On

the other hand, 112 (79.4%) regularly applied Vaseline over the nappy area with each nappy change whereas 20 (14%) applied baby powder and 8 (5.6%) did not apply anything.

Table 6 summarises the knowledge and response of mothers regarding nappy rash. While the majority of them (56.7%) did not know what caused the rash, 23 (16.3%) attributed it to frequent stooling, 19 (13.4%) to wet diaper/cloth staying too long and 7 (5%) to the type of disposable diaper/cloth napkin used. As home treatment for those who had nappy rash, 35 (73%) of respondents applied an anti-fungal cream, 11 (23%) used Vaseline/sudocream, 9 (18.7%) used medicated powder and only 5 (10.4%) exposed baby's bottom.

Table 1. Study population

Age in years	Frequency	Percentage
15-19	1	0.7
20-29	67	47.5
30-39	66	46.8
≥ 40	7	5
TOTAL	141	100
Mother's education		
None formal	2	1.4
Primary	7	5
Secondary	57	40.4
Post secondary	75	53.2
TOTAL	141	100

Table 2. Frequency of nappy rash in last 6 months preceding the study

Any nappy rash in last 6 months?	Frequency	Percentage
Yes	48	34
No	91	64.5
No response	2	1.4
TOTAL	141	100
Number of nappy rash episodes in the last 6 months		
1	32	66.6
2	11	23
3-4	4	8.4
5	1	2
TOTAL	48	100

Table 3. Type of nappy used with regard to mothers' education

Type of napkin used	Mother's education (%)				TOTAL
	None formal	Primary	Secondary	Post secondary	
Cloth napkin only	0	0	11(19.3)	4(5.3)	15(10.6)
Both cloth and disposable diaper	1(50)	3(42.9)	33(57.9)	26(34.7)	63(44.7)
Disposable diaper only	1(50)	4(57.1)	13(22.8)	45(60)	63(44.7)
TOTAL	2(100)	7(100)	57(100)	75(100)	141(100)

p=0.002

Table 4. Practice of respondents concerning use of napkins

Type of napkin used	Has your baby had nappy rash in the last 6 months?			Total (%)
	Yes (%)	No (%)	NA (%)	
Cloth napkin only	4 (8.3)	11(12)	0	15 (10.6)
Both cloth and disposable diaper	25 (52)	37(40.7)	1(50)	63 (44.7)
Disposable diaper only	19 (39.7)	43(47.3)	1(50)	63 (44.7)
TOTAL	48 (100)	91 (100)	2 (100)	141 (100)
Frequency of nappy change during day time				
Once	2 (4.2)	1(1.1)	0	3(2.1)
Twice	8 (16.6)	17(18.6)	0	25(17.7)
Three times	21 (43.7)	35(38.5)	2(100)	58(41.1)
Four times	11 (23)	18(19.8)	0	29(20.7)
≥ Five times	6 (12.5)	19(20.9)	0	25(17.7)
None	0	1(1.1)	0	1(0.7)
TOTAL	48 (100)	91(100)	2(100)	141(100)
Frequency of nappy change during night time				
Once	22(45.8)	35(38.5)	1(50)	58(41.1)
Twice	18(37.5)	30(33)	1(50)	49(34.8)
≥ Three times	7(14.6)	23(25.2)	0	30(21.3)
None	1(2.1)	3(3.3)	0	4(2.8)
TOTAL	48(100)	91(100)	2(100)	141(100)

Table 5. Routine care of the nappy area

What mother uses routinely to clean baby's bottom after a bowel movement	Frequency	Percentage
Baby wipes	106	75
Water	31	22
Tissue paper	15	10.6
Cloth	4	2.8
No answer	1	0.7
What mother regularly applies on baby's bottom		
Vaseline	112	79.4
Baby powder	20	14.1
Nothing	8	5.6
Baby oil	6	4.2
Baby lotion	1	0.7
Others (zinc oxide, castor oil, sudocream)	4	2.8

Table 6. Mothers' knowledge of and response to nappy rash

What caused the nappy rash?	Frequency	Percentage
Don't know	80	56.7
Frequent stooling	23	16.3
Wet diaper/ cloth napkin staying too long	19	13.4
Heat/ over covering	12	8.5
Type of disposable diaper/ cloth napkin	7	5
TOTAL	141	100
Home treatment of the nappy rash		
Application of Anti-fungal cream	35	73
Application of Vaseline/ sudocream	11	23
Application of Medicated powder	9	18.7
Exposed baby's bottom	5	10.4
Application of Baby powder	5	10.4
Use of Antibiotics	2	4.1
Nothing	2	4.1
Application of native medication	1	2

DISCUSSION

The prevalence of nappy rash or nappy dermatitis in this study was 34% and was higher than the 7% reported by Oduoko *et al* amongst children who presented to an urban Comprehensive Health Centre with dermatological conditions in Nigeria [6]. It is however, in keeping with previous reports in developed countries where it was found to be a highly prevalent dermatological disorder amongst nappy/diaper wearing children [3, 5, 7].

Although it has been reported that it is not unusual for every child to have at least 1 episode of diaper rash by the time he or she is toilet-trained[3] the finding in this study of up to 10% of babies having had 3 to 5 episodes of nappy rash within a 6-month period is worrisome as preventive measures are simple, available and effective.

The use of disposable diapers was significantly associated with level of education of the mother. The more educated the mothers, the more likely they were to use disposable diapers. This is probably due to the various advantages it offers including ease of use, saving cost on water and washing soap/detergent, time saving, better containment of faecal matter thereby reducing the spread of faecal organisms and for social convenience. Cost however, may be a major reason why many mothers still used cloth napkin alone or together with disposable ones. Even though users of both cloth and disposable diaper had the highest incidence of rash in this study, the difference in rates of diaper rash was not statistically significant ($p=0.738$) and this has also been documented in a previous report[8].

Maintaining dry skin under the diaper is critical to protecting the nappy area. Frequent diaper changes, which limit the amount of time the skin is exposed to urine and feces, are therefore essential for maintaining dryness and keeping urine and feces separated[9,10]. To achieve that, it has been recommended never to leave a diaper for longer than 3-4

hours and change it immediately after every bowel movement, and more frequently in the neonate due to increased skin fragility[9,11]. This implies that nappies/diapers need to be changed at least 4 times during day time and at least twice at night. In this study, amongst babies who had nappy rash, only 35.5% had their nappies changed as often as recommended during daytime, while 52% did for night time (Table 4). Possible factors responsible for the low compliance, especially during daytime, include cost, ignorance of these instructions or simply the widespread effects of advertisements of diaper products which encourage infrequent diaper changes.

It has also been recommended that when changing diapers after every bowel movement, the skin should be cleaned with plenty of water then dried thoroughly[3,11]. Only 22% of mothers in this study adhered to this counsel while the large majority (75%) used baby wipes. This may be attributed to the advantages the product offers, including convenience of use, can easily be carried around and used anywhere. Although it was beyond the scope of this study, it is noteworthy that the type of wipes used need to be taken into consideration as baby wipes contain substances that can induce contact or irritant dermatitis, such as fragrance and alcohol[3] thereby reinforcing the commonly held belief that baby wipes also contribute to irritant diaper dermatitis[12]. It is therefore prudent to choose wipes without fragrance and preservatives.

Whilst providing skin care to their infants, the large majority of mothers (79.4%) in this study routinely applied vaseline (Petrolatum) which, together with zinc oxide, castor oil or sudocream, are well known suitable barrier products and are the cornerstone for prevention of nappy rash. Talc powders are not recommended as they do not form a continuous lipid barrier layer over the skin, and obstruct the skin pores[3] thereby creating a favourable milieu for the emergence of nappy rash. This highlights the fact that there is need to educate all mothers on good diapering

practices as a good number of them used powder or nothing to prevent nappy rash.

It is noteworthy that as many as 56% of mothers of this study population in which 93% of respondents had a minimum of secondary level of education, did not know the cause of nappy rash. This contrasts with previous studies in this environment which have shown that the higher the level of education, the better the health knowledge[13,14]. This suggests that simple child rearing practices should be included in the basic school curriculum.

Nappy rash results from a combination of factors that begin with prolonged exposure to moisture and the contents of the diaper (i.e. urine and feces), [3,7] and has therefore been associated with infrequent diaper changes, improper cleansing and drying of the diaper area, failure to apply topical preparations to protect the skin and diarrhoea. Only 16.3% of mothers rightly identified frequent stooling as a cause of nappy rash. The incidence of nappy rash triples in babies with diarrhea[3,7] as stools are spread over a wider area and are wetter than normal. It is also worrisome that only 13.4% of mothers could link prolonged contact with wet diaper or cloth napkin with the rash, implying that most mothers are not aware that the condition can be prevented with application of simple measures. The type of diaper used was incriminated by 5% of respondents in this study. This is in agreement with the report that some diapers contain dyes, put in primarily for esthetic purposes or absorbency potential, which can become a source of allergy for children with sensitive skin[3,8,9].

Nappy rash usually lasts less than 3 days after more diligent diaper changing practices such as frequent changes, application of barrier products and exposure of the skin under the diaper to open air as much as possible throughout the day are initiated[3]. However, between 40% and 75% of diaper rashes that last more than 3 days are colonized with *Candida albicans*, a common cause of secondary infection[3]. Medical treatment is

then recommended with an antifungal agent which can be applied to the rash with every diaper change. The study revealed an indiscriminate use of anti-fungal creams to treat nappy rash at home (table 5), while exposing baby's bottom was practiced by only 10.4% of respondents. This can be attributed to the fact that it is not very practical as these babies are not yet toilet trained.

CONCLUSION

This study shows that nappy rash is common in our environment. However, mothers' knowledge of basic facts about the issue, such as identification of the cause, prevention and management of diaper rashes is very insufficient.

Recommendation

There is need for awareness and enlightenment campaigns about nappy rash targeted at parents, especially mothers.

REFERENCES

1. Rapini RP, Bologna JL, Jorizzo JL. Dermatology: 2-volume set. S^t Louis: Mosby, 2007. ISBN 1-4160-2999-0
2. Morelli JG. Eczematous Disorders. In: Kliegman RM et al: Nelson Textbook of Pediatrics, 18th edition, Philadelphia. Saunders Elsevier, 2007; 2693-2697
3. Kazzi AA, Dib R. Pediatrics, Diaper Rash. eMedicine.emedicine.medscape.com/article, updated: Oct 10, 2006: 1-25
4. Atherton DJ, Mills K. What can be done to keep babies' skin healthy? *RCM Midwives Journal*. 2004; 7(7):288-290
5. Ward DB, Fleischer AB, Feldman SR, Krowchuk DP. Characterization of diaper dermatitis in the United States. *Arch Pediatr Adolesc Med*. 2000; 154(9):943-6
6. Oduoko OM, Onayemi O, Oyedeji GA. A prevalence survey of skin diseases in Nigerian children. *Niger J Med*. 2001; 10 (2): 64-7
7. Buckingham KW, Berg RW. Etiologic factors in diaper dermatitis: the role of feces. *Pediatr Dermatol*. 1986; 3 (2):107-12
8. Dib R, Kazzi A. Diaper Rash. [Available

- online]http://www.emedicine.com/EMERG/topic374.htm[Accessed 13th July 2013].
9. Lane AT, Rehder PA, Helm K. Evaluations of diapers containing absorbent gelling material with conventional disposable diapers in newborn infants. *Am J Dis Child* 1990; 144(3):315-8.
 10. Chatterjee S, Pramanick N, Chattopadhyay S, Munian K, Kolhapure SA. Evaluation of the efficacy and safety of "Diaper Rash Cream" in the management of infantile irritant diaper dermatitis (IIDD) "The Antiseptic" 2005; 102 (5) : 251-255
 11. Pampers. Size 4 Special: scientific facts behind special edition technology 2013: 1-12.
 12. Humphrey S, Bergman JN, Au S. Practical Management Strategies for Diaper Dermatitis. *Skin therapy letter* 2006; 11(7): 1-6
 13. Opara PI, Eke GK, Akani NA. Mothers Perception of Sexuality Education for Children. *NigerJMed* 2010; 19(2): 168-72
 14. Alex-Hart BA, Akani NA, Nkanginieme KEO. Evaluation of Health Knowledge of Teachers in public primary schools in Bonny Local Government Area, Rivers State. Book of abstracts, Paediatric Association of Nigeria. 40 Annual and 5 International Scientific Conference 2009: 51.