Author’s response to reviews

Title: Diaper dermatitis: a survey of risk factors in Thai children aged under 24 months

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Diaper dermatitis: a survey of risk factors in Thai children aged under 24 months

Dear editors,

Thank you for taking your time reviewing our manuscript. Your comments are very valuable for improving our writing. The authors have discussed, looked back and edited the criticisms of the manuscript. We really hope that our revision will match the criteria for publication in BMC Dermatology. Our responses to editors are described as follow:

Reviewer#1: This paper aimed to assess the prevalence and risk factors of diaper dermatitis among 1 to 24 months old Thai children. The paper provides some interesting numbers about diaper dermatitis in Thailand. However, in my opinion, there are several areas that need extensive improvement.

Abstract:

1. The second sentence in your results makes no sense. Perhaps the word "highest" is missing in front of prevalence.
Response: We do agree with the reviewer’s comments. The authors have corrected the sentence to: “The highest prevalence was found in subject who were one to six months old” in the Abstract section.

Introduction:

2. The facts stated in the beginning of the introduction (line 1 to 12) are not referred to references (excluding over-all prevalence percentages). Please make sure that you include appropriate references to all your given information.

Response: We do agree with the reviewer’s comments and suggestions. The authors have put some more appropriate references to the giving information. The following references were added in to the Introduction part;


3. In line 31 it seems that the given reference (4) appears in the wrong position. Perhaps the reference should be placed two sentences earlier after you mentioned the risk factors.

Response: We do agree with the reviewer’s comments and suggestions. The authors have removed reference (4) out and replaced to a new appropriate place.
Material and methods:

4. Please give the method of selection of your parents/children.
   
   Response: Consecutive cases entered in to well baby clinic were asked to participate the study. Thus, the authors have also put this method of selection in to Material and methods part.

5. You mentioned some risk factors for which you asked for in your structured questionnaire. However, what I miss is the reason for choosing these risk factors as the factors are partially different from those mentioned in your introduction. Maybe you have additional literature to verify your decision?
   
   Response: We do agree with the reviewer’s comments and suggestions. The authors have discussed, looked back and edited the criticisms of the manuscript. We have written both Introduction and Material and method parts more harmoniously. All the following risk factors were included in the structural questionnaires. The authors also added a supplement file provided detailed description of the questionnaire.

   The general background information included in the structural questionnaires were age, sex, general condition, underlying atopic diseases and the practice of diaper care. The possible risk factors of diaper dermatitis, including gastrointestinal tract infection, the type of diaper used, and the frequency of diaper changes, and previous episodes of diaper rash were also addressed in a structural questionnaire.

6. You did not mention all your measures you present later on in the results and discussion. Perhaps you can do this in combination with a more detailed description of your questionnaire as this is what I also miss within your manuscript.
   
   Response: We do agree with the reviewer’s comments and suggestions. Thus, the authors have added a supplement file provided detailed description of the questionnaire.

7. You did not explained how quantitative variables were handled and why you have chosen the later on presented groupings (age, frequencies of diaper changes etc.).
   
   Response:

   We do agree with the reviewer’s comments and suggestions.
Age

The age was divided into 4 groups because we would like to know if there was any difference between groups compared to the previous study from China, (Li et al). From the reference study showed that significant lower prevalence of diaper dermatitis was documented among the children aged less than 6 month-old, in contrast to our result. Thus, the author have put this statement in to the manuscript for more detail.

Frequency of diaper changes

The standard recommendation is that diapers should be changed every three to four hours, a number that is based on the frequency of urination in infants. This means that diapers should be changed from six to eight times/day. Previous studies have shown that the prevalence of diaper dermatitis is significantly higher when diapers are changed fewer than six times/day compared with more frequent changing. The present study went further and compared the effects of daytime changings versus nighttime changings on the prevalence of diaper dermatitis. We found that fewer than three changes/night led to a significant increase in the risk of diaper dermatitis compared with more frequent changings (multivariate logistic regression analysis, OR=3.72, P<0.001). What the authors would like to provide is that, Frequent diaper changings during the daytime do not compensate for fewer changings during the night.

8. Although, you mentioned that there were incomplete questionnaires, you did not explain how missing data were addressed.

Response: We do agree with the reviewer’s comments. The incomplete questionnaires in the present study were in the part of underlying atopic diseases and families’ economic status. What the authors have due with the missing data was addressing them as imputed data and thus calculated the recorded data all together. This might affect the power of the test, however, the main possible risk factors were recorded completely.

Results:

9. You reported that 1153 children were recruited for the study. However, what was the number of potentially eligible children; how many parents were asked to participate? And what are the reasons for not participating?

Response: We do agree with the reviewer’s comments.
The consecutive participants were asked to participate. Only 2 cases refused to participate because of the persons who brought the children to well baby clinic were not their parents. A total number of 1153 children were calculated from a sample size calculation as follow:

\[ N = \frac{Z^2 \times (1 - \alpha/2) \times P \times (1-P)}{d^2} \]

(Note: We would like to mention that the correct equation above is unable to type via the submission electronic form)

\[
\begin{align*}
\text{Alpha (}\alpha\text{)} & = 5\% = 0.05 \\
Z & = 1.96 \\
d & = \text{absolute precision} = 0.025 \\
P & = \text{prevalence of diaper dermatitis} = 25\%
\end{align*}
\]

10. As you report about total numbers/percentages of participants within the discussion (e.g. line 1 page 7), it would be an option to include those numbers and percentage in table 1.

Response: We do agree with the reviewer’s comments and suggestions. The authors have thus put total numbers/percentages of participants in Table 1.

- Disposable diapers: 40.4% (466/1153)
- Cloth diapers: 59.6% (687/1153)

11. "Participants were considered to have diaper dermatitis if they had experienced diaper rashes during the previous six weeks." line 24 -25 page 4 belongs to methods not to the results. There is no need to repeat it, make sure that it becomes clear in the method section. Only report the prevalence in the results, please.

Response: We do agree with the reviewer’s comments and suggestions. The authors have removed line 24 -25 page 4 (Result part) and remained this sentence only in Method part.

12. Last paragraph (line 10-17 page 5) of the results. It didn't become clear to me why you mentioned this in the results. In my opinion it belongs to the methods as variables you asked for in your questionnaire. Moreover, how do you know that these factors had no association with increased incidence of diaper dermatitis? Any references? Since due to your study design an incidence cannot be one of your results. Or do you want to report about the prevalence?
Response: We do agree with the reviewer’s comments and suggestions. We have removed unrelated sentences of Result part and put them in to Method part. The answer is yes, for the last question that we would like to report about the prevalence of diaper dermatitis. We also fixed the word “incidence” to “prevalence” as your suggestion.

Discussion:

13. Overall, the discussion has good and interesting points. However, it reads very long and some areas seem to repeat. Thus, the discussion should become summarized or shortened.

Response: We do agree with the reviewer’s comments and suggestions. We have thus shortened the Discussion part as much as possible.

14. Line 42-51 page 5: You reported about a statistically significant higher prevalence of diaper dermatitis in the age group 1-6 months compared to the other examined age groups. Subsequently you justify this with a higher number of children in this age group due to your recruitment center. As the prevalence is described by the number of existing cases divided by the number of people in the population the size of the groups has no influence on the prevalence. Please try to clarify or rectify your statement in order to avoid misunderstanding.

Response: We do agree with the reviewer’s comments and suggestions. The authors have removed this improper sentence of “high number of cases in the age group 1-6 months and a higher prevalence of diaper Dermatitis within this group” out.

15. I miss some references in your discussion; line 9 page 6, line 31 page 6, line 38 page 6, line 51 page 7, line 56 page 7, line 58 page 7.

However, if one of those reported information and facts depends on your results or on a later on given reference make sure that the reader gets it.

Response: We do agree with the reviewer’s comments and suggestions. The authors have added some additional references as your suggestions.

16. Line 1, 2 and 45 page 7. You suddenly report your percentages with two decimal places. Make sure, that it is reported the same way throughout the whole manuscript.

Response: We do agree with the reviewer’s comments and suggestions. The authors have corrected the percentage writing to one decimal pattern throughout the whole manuscript.
References:

1. Your most recent reference is from 2015. You should screen and include current references (e.g. Burdall et al. 2018, Sikic Pogacar et al. 2018).

   Response: We do agree with the reviewer’s comments and suggestions. The authors have put more recent references (e.g. Burdall et al. 2018/2019, Sikic Pogacar et al. 2018, and Gunt HB et al. 2018) into the manuscript.

Reviewer #2:

Abstract:

1. The second sentence in the section "Results" section misses the word "highest": "The HIGHEST prevalence was found in subjects (...)"

   Response: We do agree with the reviewer’s comments. The authors have corrected the sentence to: “The highest prevalence was found in subjects who were one to six months old” in the Abstract section.

Materials and Methods:

2. This section is lacking a detailed report about the statistical analyses applied. For example, it is unclear if the multivariate regression was corrected for multiple testing.

   Response: We do agree with the reviewer’s comments and suggestions. The authors have put a detailed report as follow:

   “The authors first estimated the association between each risk factor and outcome of having diaper dermatitis (bivariate analysis). The initial multivariate analysis model included all risk factors. Independent risk factors of having diaper dermatitis were identified by forward stepwise logistic regression where all univariate predictors with a p-value < 0.05 were included. Multivariate regression was corrected for multiple testing. Values of P < 0.05 were considered to indicate statistical significance.”

3. Page 3, line 49-53: "Diaper Dermatitis was made from parental reporting included (...)." This sentence should be rephrased (grammar does not make sense)
Response: We do agree with the reviewer’s comments. The authors have changed the sentence to “Diaper dermatitis was made from parental reporting of any skin rashes on the diaper area during the past 6 weeks.”

Discussion:

4. Page 5, line 47-52: "This result can be simply explained by the fact that the participants were enrolled from the well baby clinic (...) leading to a high prevalence in this age group": The recruitment of participants from the Baby clinic explains the high number of cases in the age group 1-6 months, but not a higher prevalence of diaper Dermatitis within this group.

Response: We do agree with the reviewer’s comments and suggestions. The authors have removed the improper sentence of “high number of cases in the age group 1-6 months and a higher prevalence of diaper Dermatitis within this group” out.

5. Page 6, line 24-29: "Thus, more than six changings per 24-hour period but few changings during the night is especially a risk factor among this population": This sentence should be rephrased, because one could understand that more than six changings per 24h period are a risk factor for diaper Dermatitis. The authors probably wanted to state, that frequent diaper changings during the daytime do not compensate for fewer changings during the night.

Response: We do agree with the reviewer’s comments and suggestions. The authors have rephrased the sentence to “Frequent diaper changings during the daytime do not compensate for fewer changings during the night.”

6. Page 6, line 51-57: "Although a Cochrane Review (...) their use is recommended for all infants": The authors did not explain why the use of disposable diapers is recommended, even though the mentioned Cochrane Review could not find any evidence to support or refuse the use of disposable diapers.

Response: We do agree with the reviewer’s comments and suggestions. The authors have rephrased the sentences as follow:

“Although a Cochrane review could not find enough evidence from good-quality randomized controlled trials to support or refute the use of disposable diapers for the prevention of diaper dermatitis in infants; however, their use is recommended for all infants. This recommendation may support by a current evidence of using a new absorbent gel technology in disposable diaper that shown to be effective in drawing urine away from the diaper area and keeping the skin dry. Thus further dermatological problems in the diaper area are also reduced.”
7. Page 8, line 18-22: "However, there may be other as the unknown factors (..)". This sentence should be rephrased (grammar)

Response: We do agree with the reviewer’s comments and suggestions. The authors have rephrased the sentences as follow:

“However, there may be other unknown factors that have an impact on diaper dermatitis and were not included in the analyses.”

Reviewer #3

A well conducted study with an acceptable size of cohorts. Statistical methods and the analysis seem to be correct, the discussion as well as the conclusion drawn are appropriate. Although parts of the study results are similar to the results other authors have been published previously in other parts of the world, it's worth publishing data for the Thai Population.

Response: We would like to thank to the reviewer for your approval as well as your sympathy in publishing data for the Thai Population even some results were similar to some previous published manuscripts.

We really hope that our revision will match the criteria for publication in BMC Dermatology.

Sincerely yours,

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