

PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Demographic characteristics of labial adhesion in South Korea: a population-based study from 2010 to 2014
AUTHORS	Lee, In Ok; Pak, Hae Yong; Chung, Jae Eun

VERSION 1 – REVIEW

REVIEWER	Reviewer name: Greta Carrara Institution and Country IRCCS - "Mario Negri" Institute for Pharmacological Research Competing interests: None declared
REVIEW RETURNED	12-Mar-2018

GENERAL COMMENTS	<p>The manuscript entitled “Demographic characteristics of labial adhesion in South Korea: a population-based study from 2010 to 2014.” presents an interesting nationwide analysis on the incidence of labial adhesion (LA) in South Korea. Patients considered in the study are children under age 7 who were newly diagnosed with LA from 2010 to 2014.</p> <p>I find the manuscript to be generally well written, clear and easy to follow.</p> <p>Nevertheless, I would like to submit the authors some questions:</p> <p>1. Regarding the sentence “there were no cases reported after the age of 7” (page 5, lines 81-82): it means that no one diagnosis of LA in people over 7 years was reported for entire population of South Korea (about 48 millions)?</p> <p>2. Table 1. In order to compare the estimates in different years and to understand if there is a significative growing trend, I think that it can be useful to add confidence interval of each estimate and the p-value of test for trend.</p> <p>3. Table 2. Could the authors clarify the formula used for confidence intervals? The intervals seem to be too wide. When I tried to re-calculate them, I found very different results: e.g., for the age ‘0-12 months’, I obtained 124 (95CI%: 117.4-130.8) with Poisson exact method and 124 (95CI%: 117.3-130.6) with the normal approximation; for the age ‘13-24 months’, I obtained 183.6 (95CI%: 175.8-191.7) with Poisson exact method and 183.6 (95CI%: 175.7-191.5) with the normal approximation; all my other confidence intervals result different from confidence intervals in Table 2.</p> <p>4. Table 3. Regarding the ‘relative risk’ column, I calculated a $RR=1.481$ $[(2072/1128683)/(1330/1072757)]$ instead of 1.478 for the second class (13-24 months) and a $RR=0.535$ instead of 0.533 for the third one (25-36 months).</p>
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	<p>I think that it's only a problem of approximation of person-years; isn't it?</p> <p>Regarding the '95% Confidence Interval' column, also in this case there are some problems with the confidence interval estimates (e.g, the first confidence interval is 1.352-1.622 with exact Poisson method and 1.382-1.586 with the normal approximation). Could the authors explain this discrepancy?</p>
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REVIEWER	<p>Reviewer name: Harriet CORBETT</p> <p>Institution and Country: Department of Surgery Alder Hey Children's NHS Foundation Trust UK</p> <p>Competing interests: nil</p>
REVIEW RETURNED	25-Mar-2018

GENERAL COMMENTS	<p>The study make use of a new yearly health check up program for children, during which labial adhesions may be noted and specialist referral results. The specialist then confirms the diagnosis and registers the patient with a code for the diagnosis. This seems to be a simple process by which to ascertain population wide data and the study is very valuable in that regard.</p> <p>There are several points that I think the authors should answer to help the reader understand the possible reasons for the surprising increase in incidence that is reported.</p> <p>Firstly, it is not clear if the yearly health check up is compulsory or voluntary - this is important information as is the number of children having the check up each year (perhaps this is included in table 2 but its not clear if it is). Equally it is important to know if more referrals were made to the paediatric gynaecologist per year once the KDST became established. Was there any education during the set up of the KDST program that may have resulted in an increase in referrals?</p> <p>The authors include 2 paragraphs in the discussion which touch on the possible reasons for the rising incidence but these do not give enough possible explanations for the difference reported. Was the condition not routinely reported before the start of the KDST? Why start the data points with 2005? The authors mention use of magnified colposcopy photographs by another study but do not clarify if this method was used by the gynaecologists making a diagnosis in this study. Can the authors include data on how many of the children had symptoms? This would enhance the paper considerably as the majority of children do not have symptoms, so was this finding of LA of any relevance to the patients? How many underwent treatment and what were the indications for treatment?</p> <p>There is one other point that needs confirmation: in the first paragraph of the introduction the authors say that lichen sclerosis may ensue as a complication of LA and they reference Eroglu et al. I am aware that lichen sclerosus can cause labial adhesions but not the other way around and there is no mention of lichen sclerosus (or sclerosis) in Eroglu's paper. Is this statement appropriate?</p>
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REVIEWER	<p>Reviewer name: Dr Ravindar ANBARASAN</p> <p>Institution and Country: Department of Paediatric Surgery & Urology University Hospital Southampton Southampton United Kingdom</p> <p>Competing interests: none</p>
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REVIEW RETURNED	02-Apr-2018
GENERAL COMMENTS	This is a study on the demographics of LA in S.Korea. Incidence and management of LA varies widely across the globe. The paper adds no novelty to existing literature. An extensive study of the aetio-pathogenesis and management strategies in this nation wide database might have been useful to the readers of the journal than just a mere demographic evaluation.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Comments to the Author

The manuscript entitled “Demographic characteristics of labial adhesion in South Korea: a population-based study from 2010 to 2014.” presents an interesting nationwide analysis on the incidence of labial adhesion (LA) in South Korea. Patients considered in the study are children under age 7 who were newly diagnosed with LA from 2010 to 2014.

I find the manuscript to be generally well written, clear and easy to follow.

Nevertheless, I would like to submit the authors some questions:

1. Regarding the sentence “there were no cases reported after the age of 7” (page 5, lines 81-82): it means that no one diagnosis of LA in people over 7 years was reported for entire population of South Korea (about 48 millions)?

Response: To get the incidence, we’ve only included patient who were newly diagnosed with LA. Certainly there were reported cases of LA (ICD code Q525) in ages older than 7. But no girls or women over age 7 were newly diagnosed with Q525 as we have stated in page 5, lines83-84.

2. Table 1.

In order to compare the estimates in different years and to understand if there is a significative growing trend, I think that it can be useful to add confidence interval of each estimate and the p-value of test for trend.

Response: We do agree with your suggestion of adding the confidence interval of each estimate and ‘p-value for trend’ in order to reveal the growing tendency in LA diagnosis. We’ve made the changes in Table 1 accordingly. The revised Table 1 is shown below and the new version has been uploaded. The data highlighted in yellow is the part that has been added.

Age (months)	2010	2011	2012	2013	2014	Total	P-value
0-12	56.8 (47.1-67.9)	84.7 (73.0-97.9)	98.4 (85.8-112.3)	165.2 (148.5-183.3)	219.6 (199.8-240.8)	124.0	<.0001
13-24	111.3 (97.8-126.1)	157.2 (141.1-174.6)	142.1 (127.1-158.4)	215.2 (196.8-234.9)	289.5 (267.7-312.5)	183.6	<.0001
25-36	53.3 (44.4-63.6)	56.6 (47.1-67.4)	59.9 (50.2-71.0)	68.5 (58.2-80.0)	92.3 (80.4-105.4)	66.3	<.0001
27-48	33.4 (26.3-41.8)	34.3 (27.2-42.7)	30.3 (23.5-38.4)	39.1 (31.3-48.2)	42.6 (34.6-52.0)	36.0	0.0628
49-60	20.7 (15.0-27.7)	21.0 (15.5-27.9)	13.7 (9.4-19.4)	15.3 (10.6-21.4)	18.9 (13.6-25.5)	17.9	0.3030
61-72	12.8 (8.5-18.5)	6.6 (3.6-11.0)	11.8 (7.8-17.2)	8.1 (4.9-12.7)	9.0 (5.5-13.9)	9.7	0.3520
73-84	3.0 (1.2-6.2)	4.6 (2.2-8.4)	3.8 (1.6-7.4)	5.3 (2.7-9.2)	3.8 (1.8-7.3)	4.1	0.5720
85-96	1.3	1.7	0.9	1.9	0.9	1.3	0.7809

	(0.3-3.7)	(0.5-4.4)	(0.1-3.3)	(0.5-4.8)	(0.1-3.2)		
Total	36.1 (33.4-39.0)	45.6 (42.5-48.8)	45.5 (42.4-48.7)	65.1 (61.5-69.0)	82.7 (78.5-87.0)	55.0	<.0001

3. Table 2.

Could the authors clarify the formula used for confidence intervals? The intervals seem to be too wide. When I tried to re-calculate them, I found very different results: e.g., for the age '0-12 months', I obtained 124 (95CI%: 117.4-130.8) with Poisson exact method and 124 (95CI%: 117.3-130.6) with the normal approximation; for the age '13-24 months', I obtained 183.6 (95CI%: 175.8-191.7) with Poisson exact method and 183.6 (95CI%: 175.7-191.5) with the normal approximation; all my other confidence intervals result different from confidence intervals in Table 2.

Response: We were truly embarrassed and ashamed about the miscalculation. We do appreciate your effort on pointing out the calculation error as this might have misled the readers. Appropriate changes have been made in Table 2 and in the revised manuscript. We have used the Poisson exact method as stated below.

Reference : Newcombe R. Two sided confidence intervals for the single proportion: a comparative evaluation of seven methods. *Statistics in Medicine* 1998;17:857-872.

Formula:

$$p = \frac{x}{n}$$

If p is unknown,

$$\text{Define: } q = 1 - p$$

The 100(1-α)% Wilson Score confidence interval with continuity correction is defined as:

$$\left(\frac{\left(2np + z_{1-\frac{\alpha}{2}}^2 - 1 \right) - z_{1-\frac{\alpha}{2}} \sqrt{z_{1-\frac{\alpha}{2}}^2 - \left(2 + \frac{1}{n} \right) + 4p(nq + 1)}}{2 \left(n + z_{1-\frac{\alpha}{2}}^2 \right)}, \frac{\left(2np + z_{1-\frac{\alpha}{2}}^2 + 1 \right) + z_{1-\frac{\alpha}{2}} \sqrt{z_{1-\frac{\alpha}{2}}^2 - \left(2 - \frac{1}{n} \right) + 4p(nq - 1)}}{2 \left(n + z_{1-\frac{\alpha}{2}}^2 \right)} \right)$$

**Table 2. Average incidence of labial adhesion per 100,000 person-years
classified by age group from 2010 to 2014**

Age (months)	Labial adhesion	population	Proportion in age group	Incidence (cases/100,000 person-years)	95% confidence interval
0-12	1330	1072757	27%	124.0	65.4 – 182.5 117.4 – 130.8
13-24	2072	1128683	42%	183.6	121.3 – 244.8 175.8 – 191.6
25-36	755	1138727	15%	66.3	52.4 – 79.9 61.7 – 71.2
37-48	408	1134383	8%	36.0	31.6 – 40.3 32.6 – 39.6
49-60	200	1118929	4%	17.9	15.1 – 20.8 15.5 – 20.5
61-72	108	1115703	2%	9.7	7.4 – 11.9 7.9 – 11.7
73-84	46	1126805	1%	4.1	3.3 – 4.8 3.0 – 5.4
85-96	15	1129854	0%	1.3	0.9 – 1.7 0.7 – 2.2
total	4934	8965839	100%	55.0	6.1 – 104.0 53.5 – 56.6

4. Table 3.

Regarding the 'relative risk' column, I calculated a $RR=1.481$ [$(2072/1128683) / (1330/1072757)$] instead of 1.478 for the second class (13-24 months) and a $RR=0.535$ instead of 0.533 for the third one (25-36 months). I think that it's only **a problem of approximation of person-years**; isn't it?

Regarding the '95% Confidence Interval' column, also in this case there are some problems with the confidence interval estimates (e.g, the first confidence interval is 1.352-1.622 with exact Poisson method and 1.382-1.586 with the normal approximation). Could the authors explain this discrepancy?

Response: We have calculated the RR using both Poisson exact method and normal approximation. As it is shown below, the confidence interval for each RR shows different values according to the calculation method used. In the revised manuscript, the confidence interval calculated by the Poisson exact method is shown. Again, thank you for pointing out the calculation errors and giving us a second chance to look back on make the relevant corrections.

Table 3. Relative risk of acquiring labial adhesion classified by age group from 2010 to 2014

Age	RR	95% Confidence Interval		95% Confidence Interval	
		Normal approximation		Poisson exact method	
0-12	1				
13-24	1.481	1.398	1.569	1.381	1.587
25-36	0.535	0.496	0.576	0.488	0.585
37-48	0.290	0.264	0.318	0.259	0.324
49-60	0.144	0.127	0.163	0.124	0.167
61-72	0.078	0.066	0.092	0.064	0.095
73-84	0.033	0.026	0.042	0.024	0.044
85-96	0.011	0.007	0.016	0.006	0.018

Reviewer: 2

Comments to the Author

The study make use of a new yearly health checkup program for children, during which labial adhesions may be noted and specialist referral results. The specialist then confirms the diagnosis and registers the patient with a code for the diagnosis. This seems to be a simple process by which to ascertain population wide data and the study is very valuable in that regard. There are several points that I think the authors should answer to help the reader understand the possible reasons for the surprising increase in incidence that is reported.

Firstly, it is not clear if the yearly health checkup is compulsory or voluntary - this is important information as is the number of children having the checkup each year (perhaps this is included in table 2 but it's not clear if it is).

Response: Thank you for bringing up this important comment. The KDST (Korean Developmental Screening Test for Infants & Children) informs the guardian with letters and text messages for the need of taking yearly exams and presents a list of clinics nearby where the checkup can be taken. Some of the childcare facilities require the KDST registry before the child can be enrolled in the facility. It is not compulsory in a sense that the guardian can be fined if the child has not registered in KDST.

If the registry were compulsory with every single child enrolled in it, it would have given a better result properly representing the clinical profiles of LA based on the whole population. With all the shortcomings standing, the strength of this study lies in the involvement of 4934 newly developed LA cases based on the whole population which is quite a large number considering the rarity of LA. As this year marks the 10th anniversary of the KDST registry, data concerning the enrollment rate and ways to improve it will be presented in the coming conferences of pediatrics and public health policy. Comment: Equally it is important to know if more referrals were made to the pediatric gynecologist per year once the KDST became established. Was there any education during the setup of the KDST program that may have resulted in an increase in referrals?

Response: Instead of education sessions, the KDST check-up list encompasses a thorough exam that the primary physician needs to fill up. For the female genitourinary system, the presence of LA is to be checked. Unfortunately data concerning the referrals could not be found, because the referrals are made voluntarily based on the primary physician's decision.

We do agree with your comment about the lack of information stated concerning the enrollment and referral rate. To ensure the role of KDST in preventing the diseases and enhancing children's health, ways to enroll more children into the registry as well as providing appropriate referrals should be sought accordingly.

Comment: The authors include 2 paragraphs in the discussion which touch on the possible reasons for the rising incidence but these do not give enough possible explanations for the difference reported. Was the condition not routinely reported before the start of the KDST? Why start the data points with 2005?

Response: The Korea National Insurance Claims Database (KNICD) started providing analyzable data from year 2005. The disease code classified as the International Classification of Diseases (ICD), date of birth, history of hospital admission including the cost covered by the national health insurance, and prescriptions given are some of the data included in the KNICD. Before 2005, patient's data were not coded properly.

Numerous reports under various fields of medicine have been published using the KNICD. In studies involving rare diseases, the usage of KNICD was especially valuable since it could recruit large number of cases based on the whole population.

'Nationwide Incidence of Clinically Diagnosed Retinal Vein Occlusion in Korea, 2008 through 2011' Ophthalmology 2014;121:1274-1280 is one of publication made using the KNICD.

Comment: The authors mention use of magnified colposcopy photographs by another study but do not clarify if this method was used by the gynaecologists making a diagnosis in this study.

Response: We mentioned the usage of colposcopy to demonstrate variable ways of LA diagnosis. Colposcopy was not required in the registry of KDST. The usage of magnified colposcopy might help in detecting very small LAs, but the significance of detecting such small lesions without clinical significance is questionable and it certainly is not broadly used in LA diagnosis.

Comment: Can the authors include data on how many of the children had symptoms? This would enhance the paper considerably as the majority of children do not have symptoms, so was this finding of LA of any relevance to the patients? How many underwent treatment and what were the indications for treatment?

Response: We do agree with the reviewer that the analysis of accompanying symptoms and treatment modality taken could have shed much light in the study of LA. Unfortunately there is a definite limitation of this study in which each patient's medical record could not be analyzed. Nevertheless, we did want to indicate that the physician's vigilance had much impact on the diagnosis of LA. As we have indicated in page 7 lines 139 to 141, a larger study with the cooperation of multiple institutes is warranted for the further studies of LA treatment

Comment: There is one other point that needs confirmation: in the first paragraph of the introduction the authors say that lichen sclerosis may ensue as a complication of LA and they reference Eroglu et al. I am aware that lichen sclerosus can cause labial adhesions but not the other way around and there is no mention of lichen sclerosus (or sclerosis) in Eroglu's paper. Is this statement appropriate?

Response: We were much ashamed and rather embarrassed by this comment of the reviewer. Through multiple adding and deleting processes in writing this manuscript and numerous proof readings as English is not our first language, there must have been a mix up of references. Appropriate changes have been made in the revised version of this manuscript.

Reviewer: 3

Comments to the Author

This is a study on the demographics of LA in S.Korea. Incidence and management of LA varies widely across the globe. The paper adds no novelty to existing literature. An extensive study of the aetio-pathogenesis and management strategies in this nation wide database might have been useful to the readers of the journal than just a mere demographic evaluation.

VERSION 2 – REVIEW

REVIEWER	Reviewer name: Greta Carrara Institution and Country: IRCCS - "Mario Negri" Institute for Pharmacological Research Italy Competing interests: None declared
REVIEW RETURNED	26-Apr-2018
GENERAL COMMENTS	Thank you for properly addressing most of the comments. However, I believe that some errors remained regarding the confidence intervals in Table 3: the confidence intervals reported as 'Poisson exact method' actually correspond to the confidence intervals calculated with the Normal approximation.

	I mean that IC 1.381-1.587, 0.488-0.585, etc... is calculated with Normal approximation, not with Poisson exact method. Poisson method would have returned 1.352-1.622, 0.475-0.602, etc... So, with which method do the authors calculate 1.398-1.569, 0.496-0.576, etc...?
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REVIEWER	Reviewer name: Harriet Corbett Institution and Country: Alder Hey Children's NHS Foundation Trust UK Competing interests: none
REVIEW RETURNED	12-May-2018

GENERAL COMMENTS	<p>The authors have responded appropriately to all of the previous questions in their reply, but I am still a little unclear / unsure regarding a few points.</p> <p>1. in the 'What this study adds' section you report: 'The increment of LA diagnosis after the KDST registry took hold shows the importance of the physician's vigilance in detecting LA'. However, if the majority of the patients are asymptomatic, what is the value of detecting them, why is it important? The greatest value that I can see is that doctors can now tell parents just how common they are and reassure them, but I disagree with saying that physicians vigilance is important. Why look? Why is it important to know? It just causes worry and in the current climate, one should perhaps argue that its invasive to examine a child's genitalia every year for an asymptomatic issue. I feel it would be more appropriate to say that the study tells us how common they are, only examine if they have symptoms.</p> <p>2. my second concern is that the authors have responded to my previous comments in their reply but I don't see that this is reflected in the manuscript. I feel that their explanations should be included in the manuscript (not necessarily in full, but enough for the reader to know and understand the background to the data) as I assume other readers will have the same questions. for example, make it very clear that the test is not compulsory. Equally say specifically that the primary physician used their discretion when making referrals to the gynaecologist - this is almost certainly the reason for the rise in incidence, as the system became embedded, the primary physicians looked more closely and reported more minor degrees of LA and then referred more cases. A further example is that the data starts in 2005 as thats when the KNICD database began - that should be in the manuscript as well, its a clear reason for the data reported.</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer 1

The authors sincerely thank the reviewer for going over the trouble of verifying the calculation results. To verify the results, we have re-calculated the confidence intervals of Table 3. R package/exactci program and 'central method' for Poisson exact method was used. <http://127.0.0.1:15144/library/exactci/html/poisson.exact.html>)

Again we came up with the same result using the Poisson method. The results were double checked with multiple personnel in the Institute of Health Insurance and Clinical Research center of Ilsan Hospital.

We deeply regret that the advised revision could not be done, but as the calculation results came out as before, the authors are sticking with the previous results.

Table 3. Relative risk of acquiring labial adhesion classified by age group from 2010 to 2014

Age(month) Relative risk 95% Confidence interval P value

0-12 1 -

13-24 1.481 1.381 – 1.587 <.0001

25-36 0.535 0.488 – 0.585 <.0001

37-48 0.290 0.259 – 0.324 <.0001

49-60 0.144 0.124 – 0.167 <.0001

61-72 0.078 0.064 – 0.095 <.0001

73-84 0.033 0.024 – 0.044 <.0001

85-96 0.011 0.006 – 0.018 <.0001

The results using the normal approximation method came out as the following.
age RR normal approximation

0-12 1

13-24 1.481 1.382 1.586

25-36 0.535 0.489 0.585

37-48 0.290 0.260 0.324

49-60 0.144 0.124 0.167

61-72 0.078 0.064 0.095

73-84 0.033 0.025 0.044

85-96 0.011 0.006 0.018

Reviewer 2

1. The authors do agree with the reviewer on the need to reconsider the significance of detecting asymptomatic LA cases as it might be resolved spontaneously and burden the parents with worries. Revisions have been made accordingly.

Conclusions: The demographic characteristics of LA in South Korea revealed by this nationwide, population-based study will help the pediatrician and gynecologist in understanding the disease course. The increment of diagnoses of LA after the KDST registry took hold shows the importance of the physician's vigilance in diagnosing LA. The demographic characteristics of LA including the average incidence and the highest incidence age group in South Korea was revealed in this nationwide, population-based study including a total of 4934 newly developed LA cases. Further studies are needed to reveal the natural disease course and the significance of diagnosing asymptomatic LA cases through mandatory genital examination.

What this study adds

3. The increment of LA diagnosis after the KDST registry took hold shows the importance of the physician's vigilance in detecting LA. Further studies are needed to reveal the natural disease course and the significance of diagnosing asymptomatic LA cases through mandatory genital examination.

2. Clarifying the following points in the manuscript:

1) KDST was not compulsory

2) Referrals to the gynecologist was done under the discretion of the primary physician

3) The KNICD data set started in 2005

Introduction

Korean National Health Insurance Service (KNHIS) covers more than 90% of the whole population in South Korea since 1989, and all health care related data including the disease code, date of birth, history of hospital admission and prescriptions given are collected in the Korea National Insurance Claims Database (KNICD) which began in 2005. According to the International Classification of Diseases (ICD-10), Q525 is the single code assigned to LA.

From 2008, Korean Developmental Screening Test for Infants & Children (KDST) has been initiated. Rather than visiting the pediatrician after the development of disturbing symptoms, this service enables children of all ages to get a yearly health check-up to ensure proper growth and development. Rather than visiting the pediatrician after having clinical symptoms, this voluntary health check-up supports the proper growth and development. When LA is noted during the check-up, the patient is referred to a pediatric gynecologist under the discretion of the primary physician.

Results

The number of newly diagnosed LA has increased from 101 cases in 2005 when the KNICD took hold to 1489 cases in 2014. The abrupt increment of the reported LA cases since the initiation of KDST in 2008 was notable (Figure 1).

Discussion

With the initiation of KDST in 2008, rather than visiting the pediatrician after the development of clinical symptoms, children could get a free yearly health check-up to ensure the proper growth and development. Reported cases of LA have abruptly increased from 101 cases in 2005 when the KNICD started gathering health care related data to 1489 cases in 2014. This increase in LA cases with the initiation of the KDST registry can be explained by the role of vigilant inspection of the physician, enabling the inclusion of asymptomatic LA cases (Figure 1). As the KDST registry was voluntary rather than mandatory and the referral to the pediatric gynecologist was based on the primary physician's discretion, the data in this study falls short of representing the real number of LA in South Korea. With all the shortcomings standing, the strength of this study still lies in the involvement of 4934 newly developed LA cases which is quite large a number considering the rarity of LA.

Discussion

Based on the population based national registry, a total of 4934 newly developed LA cases in South Korea were analyzed. The average incidence of LA was 55.0 cases/100,000 person-years from 2010 to 2014. The increment of reported LA after the KDST registry shows the importance of physician vigilance in diagnosing LA. The 13 to 24 months group showed the highest average incidence of 183.6 cases/100,000 person-years (95% CI 175.8-191.6), coinciding with the hypo-estrogenic milieu and persistent irritation due to diaper usage. Proper hygiene as a means of treatment should be emphasized before considering unnecessary intervention and the chance of spontaneous resolution with proper life style adjustment should be kept in mind. Further studies are needed to reveal the natural disease course and the significance of diagnosing asymptomatic LA cases through mandatory genital examination.