Journal of Clinical and Translational Research
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Does ankyloglossia interfere with breastfeeding in newborns?

A cross-sectional study

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Handling editor:
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1st Editorial decision
25-Dec-2020

Ref.: Ms. No. JCTRes-D-20-00139
Does ankyloglossia interfere with breastfeeding in new-borns? - a cross-sectional study
Journal of Clinical and Translational Research

Dear Ms Souza-Oliveira,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below. Please note that the reviewer identified fundamental methodological flaws in your paper and advised a reject. However, the editorial board feels that most of these issues could be addressed in a revision. This does not mean that we take the issues lightly, and neither should you. We are, nevertheless, willing to give you a shot a considerably improving your manuscript.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Also, please ensure that the track changes function is switched on when implementing the revisions. This enables the

reviewers to rapidly verify all changes made.

Your revision is due by Jan 24, 2021.

To submit a revision, go to https://www.editorialmanager.com/jctres/ and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Reviewers' comments:

Reviewer #1: The study claim to examine factors that interfere with breastfeeding difficulties. However, this study suffers from multiple and significant methodological problems.
Here are the most prominent:
1. No hypothesis. No single research question. How was sample size calculated without a specific question and at least some preliminary data to base the calculation?
2. The study lacks a definition of ankyloglossia. There are two common definitions:
a. Anatomic definition: Visualizing and palpating the frenulum under the tongue. In experienced hands, more than 99% of infants have lingual frenulum. I suggest a thorough literature search to look for the relevant articles. The diagnosis here would obviously not assist to find associations with breastfeeding difficulties. This is the definition used in this article thus the conclusion that "ankyloglossia did not interfere with breastfeeding" cannot be made.
b. Functional definition: A baby with breastfeeding difficulties thought to be caused by lingual frenulum. This is not the definition used in this article.
There are many other problems with methodology, bur the above are sufficient that the researchers should re-consider their research methodology.

Authors' response

Michal Heger

Editor-in-Chief

Journal of Clinical and Translational Research

January 24th, 2021

Dear Editor,

Thank you for inviting us to re-submit the article "Does ankyloglossia interfere with breastfeeding in new-borns? - a cross-sectional study". (JCTRES-D-20-00139). We believe that

the reviewer's feedback improved the manuscript and we address their suggestions (highlighted in yellow). Our point-to-point answers are described below.

REVIEWER #1

Reviewer's comment: The study claim to examine factors that interfere with breastfeeding difficulties. However, this study suffers from multiple and significant methodological problems. No hypothesis. No single research question.

Authors' response: We reformulated the research question in order to be clearer, and added the hypothesis, as suggested. Please, see:

*Introduction, page 1, 5th paragraph, 3rd sentence: "*The aim of the present study was to: 1) evaluate the prevalence of ankyloglossia in new-borns and breastfeeding difficulties reported by mothers; and 2) evaluated the possible factors that might interfere with breastfeeding. The null hypothesis is that the prevalence of ankyloglossia and breastfeeding are low, and ankyloglossia may not interfere with breastfeeding. The alternative hypothesis is that ankyloglossia may be the main factor that interfere with breastfeeding.*"*

Abstr
act: Objective: **"**Evaluate the prevalence of ankyloglossia in new-borns and the breastfeeding difficulties reported by mothers; and also assess the possible factors that may interfere with breastfeeding."

We also reformulated the conclusion in order to agree with the research question:

*Discussion, page 5 1st paragraph: "*Contrarily of what was expected, the alterative hypothesis was rejected and we found that ankyloglossia was not a factor for breastfeeding difficulties in this study.*"*

Conclusion, Page 9, 2nd paragraph: "The prevalence of ankyloglossia was low. Most of the new-borns with ankyloglossia were able to breastfeed and that guidelines for breastfeeding are directly linked to ease of breastfeeding. In addition, mothers who could breastfeed exclusively and those with a lower income had fewer breastfeeding

difficulties. Although our results have shown that ankyloglossia did not affect breastfeeding, there is a need for prospective studies for the long-term evaluation of the new-borns to determine possible factors associated with interruption of breastfeeding."

Abstract, Conclusion: "The prevalence of ankyloglossia was low. Successful breastfeeding was more dependent on the fact that the new-born is not premature, on the family's income, on receiving guidance on breastfeeding and on exclusive breastfeeding. Although ankyloglossia was not associated to breastfeeding, future prospective studies should evaluate the long-term factors that can interfere with breastfeeding."

1. **Reviewer's comment:** How was sample size calculated without a specific question and at least some preliminary data to base the calculation?

   Authors' response: Thanks for the comment. For the sample size calculation, we considered the incidence of ankyloglossia based on the study of Messner et al. (2000) that aimed to investigate the association between ankyloglossia with breastfeeding difficulties. We changed the text in order to make it clear. Please, see:

   Materials and Methods, Page 2, in the 2nd paragraph: "To calculate the sample size, we considered an incidence of 4.8% of ankyloglossia in new-borns based on the study of Messner et al. (2000)[10], a margin of error of 3.0% and a 99.0% confidence interval. The minimum calculated sample size was 337. To compensate for possible losses, we added 20.0%, reaching a final sample of 404 new-borns for our study."

2. **Reviewer's comment:** The study lacks a definition of ankyloglossia. There are two common definitions:

   a. **Anatomic definition:** Visualizing and palpating the frenulum under the tongue. In experienced hands, more than 99% of infants have lingual frenulum. I suggest a thorough literature search to look for the relevant articles. The diagnosis here would obviously not assist to find associations with breastfeeding difficulties. This is the definition used in this article thus the conclusion that "ankyloglossia did not interfere with breastfeeding" cannot be made.
   b. **Functional definition:** A baby with breastfeeding difficulties thought to be caused by lingual frenulum. This is not the definition used in this article.

Authors' response: Thanks for the comment. We agree that the diagnosis used in this study can be a limiting factor as it can have flaws in detecting breastfeeding difficulties. We added a discussion of other diagnostic criteria for ankyloglossia, such as the Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF) (Amir et al., 2005), The Bristol Tongue Assessment Tool (BTAT) (Ingram et al., 2015) and the Tongue-tie and Breastfed Baby (TABBY) (Ingram et al., 2019). All criteria seem to have some limitations regarding breastfeeding. We reformulated the discussion and recognized the diagnosis as a limitation of the study.

Discussion, page 6, 2nd paragraph: "In addition, there are several diagnostic methods to evaluate breastfeeding difficulties. For this reason, there is controversy about the treatment for ankyloglossia according to different diagnostic criteria. [10]

The Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF) is a criterion that can be used to objectively to assess the degree of ankyloglossia [21]. However, is still based on subjective clinical assessments and does not address issues related to breastfeeding difficulties.[18] The HATLFF tool is validated, however, there are concerns of its reliability. [22] The Bristol Tongue Assessment Tool (BTAT) provides an objective and simple assessment of the severity of the tongue attachment [23]. To improve the diagnosis, the Tongue-tie and Breastfed Baby (TABBY) assessment tool was proposed, including questions related to the position of the frenulum, the tongue shape and lifting movements (tongue on the palate) and expulsion (tongue out of the mouth)[24]. All tools are limited regarding the assessment of feeding.[24] Due to the absence of protocols to simultaneously evaluate the characteristics of the frenulum tongue and the functions of sucking and swallowing during breastfeeding, the Martinelli Protocol was proposed [12] for the present study. The protocol collects information related to the shape, fixation, thickness of the tongue and evaluates the movements and potential functions, which better fitted the aims of the present study. The use of a different type of diagnosis could render different results, which is a limitation of this study.

It seems that the diagnosis of ankyloglossia has improved in the last decade, which has contributed to an increase of frenectomy procedures. Walsh et al. (2017) demonstrated that the incidence of children diagnosed with ankyloglossia increased more than eight times, while the incidence of children undergoing the frenectomy procedure increased more than nine times.[25] There was an increase in the reported diagnosis of ankyloglossia and an increase in the reported frenulum procedures from the 1997 data to the 2012 data.[25]"

Discussion, page 9, 1st paragraph, 3rd sentence: "The diagnosis used to detect ankyloglossia can be other limitation once it does not directly assess breastfeeding."

We also added a definition of ankyloglossia and lingual frenulum at the Introduction. Please, see:

> *Introduction, page 1, 1st paragraph:* "The lingual frenulum is a fold of mucous membrane that connects from the floor of the mouth to the midline of the lower part of the tongue, in which it helps to stabilize the base of the tongue and does not impair its movement. [1]However, a congenital anomaly, called ankyloglossia, popularly known as a tongue tie, is a condition in which a small portion of the tongue tissue that should have undergone apoptosis during embryonic development remains attached to the sublingual surface, inserted in the anterior portion near the tip of the tongue, which restricts its movement.[2]"

About the relationship between ankyloglossia and breastfeeding, we modified the text to make the understanding clearer:

> *Introduction, page 1, 3rd paragraph*: "Abnormal tongue movements may interfere with breastfeeding, as new-borns with limited tongue mobility may not be able to grasp the nipple with adequate sealing during breastfeeding, which can result in nipple pain, nipple fissure and ineffective sucking, which can predispose early weaning. [5]"

References:

1. Messner AH, Lalakea ML, Aby J, et al. Ankyloglossia: incidence and associated feeding difficulties. *Arch Otolaryngol Head Neck Surg* 2000; 126 :36-39.

2. Amir LH, James JP, Beatty J. Review of tongue-tie release at a tertiary maternity hospital. *J Paediatr Child Health* 2005; 41: 243–245.

3. Ingram J, Johnson D, Copeland M, et al. The development of a tongue assessment tool to assist with tongue-tie identification. *Arch Dis Child Fetal Neonatal* 2015; 100: F344–F348.

4. Ingram J, Copeland M, Johnson D, et al. The development and evaluation of a picture tongue assessment tool for tongue-tie in breastfed babies (TABBY). *Int Breastfeed J* 2019; 14: 31.

2nd Editorial decision
28-Jan-2021

Ref.: Ms. No. JCTRes-D-20-00139R1
Does ankyloglossia interfere with breastfeeding in new-borns? - a cross-sectional study
Journal of Clinical and Translational Research

Dear Ms Souza-Oliveira,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below. Please integrate the comments of the reviewer into your manuscript and rebut where you deem necessary. It is very critical that an updated, accurate, and comprehensive definition of ankyloglossia is used and that the results comply with that definition. The editorial board realizes that the paper is about more than the incidence of ankyloglossia in newborns and that it focuses mainly on the question whether ankyloglossia ia an impediment to breastfeeding. That is why we are willing to find middle ground between the position of the reviewer and the central message of the authors. Nevertheless, the paper should be based on sound and valid premises, which is what we are asking you to thoroughly look into again.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Also, please ensure that the track changes function is switched on when implementing the revisions. This enables the reviewers to rapidly verify all changes made.

Your revision is due by Feb 27, 2021.

To submit a revision, go to https://www.editorialmanager.com/jctres/ and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Reviewers' comments:

Reviewer #1: The authors now state that their definition of ankyloglossia is the anatomic definition. They use the study of Messner published in 2000 to indicate that the incidence is 4.8%. In the 20 or more years since this publication there are many reports of various incidences, especially as "posterior frenula" are now recognized.
From the Data collection section, this reviewer understands that an anatomic definition was used. A modified version with omission of the minimal functional parts taken from Martinelli et al, was used. However, the current though is that some degree of lingual frenulum is present in practically every infant. The authors fail to acknowledge this fact. Hence their reported incidence is flawed. It should be close to 100% and not 15%. It could be concluded from their study that the prevalence if visible lingual frenulum based on the modified

Martinelli's method was 15%. This result is of minimal interest to the readership as such reports are not rare in the medical literature.
Furthermore, the prevalence of BF difficulties in the entire population is about 15%. Not low at all. All infants-mothers dyads with BF difficulties deserve evaluation and consideration of an intervention to promote BF success. This is exactly the reason why the functional diagnosis, i.e., infants with BF difficulties is better used in 2021.

Authors' response

Michal Heger

Editor-in-Chief

Journal of Clinical and Translational Research

February 12th, 2021

Dear Editor,

Thank you for inviting us to re-submit the article "Does ankyloglossia interfere with breastfeeding in new-borns? - a cross-sectional study". (JCTRES-D-20-00139). We believe that the reviewer's feedback improved the manuscript and we address their suggestions (highlighted in yellow). Our point-to-point answers are described below.

REVIEWER #1

Reviewer's comment: The authors now state that their definition of ankyloglossia is the anatomic definition. They use the study of Messner published in 2000 to indicate that the incidence is 4.8%. In the 20 or more years since this publication there are many reports of various incidences, especially as "posterior frenula" are now recognized.

From the Data collection section, this reviewer understands that an anatomic definition was used. A modified version with omission of the minimal functional parts taken from Martinelli et al, was used. However, the current though is that some degree of lingual frenulum is present in practically every infant. The authors fail to acknowledge this fact. Hence their reported incidence is flawed. It should be close to 100% and not 15%. It could be concluded from their study that the prevalence if visible lingual frenulum based on the modified Martinelli's method was 15%. This result is of minimal interest to the readership as such reports are not rare in the medical literature.

Furthermore, the prevalence of BF difficulties in the entire population is about 15%. Not low at all. All infants-mothers dyads with BF difficulties deserve evaluation and consideration of

an intervention to promote BF success. This is exactly the reason why the functional diagnosis, i.e., infants with BF difficulties is better used in 2021.

Authors' response: Thanks for the comment. We agree that the diagnostic criteria used in this study does not consider the functional diagnosis for ankyloglossia and we discussed as a limitation of the study. We also added a discussion of other diagnostic criteria rather than Messner et al. We modified the discussion section, please see:

Page 6,4th paragraph: "However, the diagnosis used in our study is limited due to the fact that we only considered the modified diagnosis of Martinelli et al. and only the anatomical definition was considered; we did not take into account the functional definition. The literature addresses a variety of existing prevalence of ankyloglossia. Haham et al. (2014) found that 99.5% of new-borns had a visible sublingual frenulum.[3] Maya-Enero et al. (2020) addresses that although virtually all children have a lingual frenulum to some degree, although the authors found that only 3.5% of them had a tongue stuck symptomatic and requiring treatment or surgical intervention.[21] Thus, considering that almost all infants have lingual frenulum, the prevalence would be close 100%.[21] The prevalence of ankyloglossia in our study is 15% considering Martinelli et al. modified criteria."

Page 9, 2nd paragraph, 3rd sentence: "The use of Martinelli et al. modified criteria with only the anatomical definition, is a limitation, since breastfeeding was not directly assessed. This also results in a limitation in the prevalence of ankyloglossia and interferes with the prevalence of new-borns with difficulties to breastfeed."

We agree with the reviewer that the prevalence of ankyloglossia of 15% is due to Martinelli et al. modified criteria and that breastfeeding difficulties of 15% is not low. We highlighted the change in the text. We also reformulated the abstract and the conclusion:

Discussion, Page 7, 1st line: "The prevalence of ankyloglossia in our study is 15% considering Martinelli et al. modified criteria."

Abstract: "Successful breastfeeding was more dependent on the fact that the new-born is not premature, on the family's income, on receiving guidance on breastfeeding and on exclusive breastfeeding. Although ankyloglossia was not associated to breastfeeding, future prospective studies should evaluate the long-term factors that can interfere with breastfeeding."

Conclusion, page 9: “Most of the new-borns with ankyloglossia were able to breastfeed and that guidelines for breastfeeding are directly linked to ease of breastfeeding. In addition, mothers who could breastfeed exclusively and those with a lower income had fewer breastfeeding difficulties. Although our results have shown that ankyloglossia did not affect breastfeeding, there is a need for prospective studies for the long-term evaluation of the new-borns to determine possible factors associated with interruption of breastfeeding.”

3rd Editorial decision
28-Feb-2021

Ref.: Ms. No. JCTRes-D-20-00139R2
Does ankyloglossia interfere with breastfeeding in new-borns? - a cross-sectional study
Journal of Clinical and Translational Research

Dear author(s),

Reviewers have submitted their critical appraisal of your paper. The reviewers' comments are appended below. Based on their comments and evaluation by the editorial board, your work was FOUND SUITABLE FOR PUBLICATION AFTER MINOR REVISION.

If you decide to revise the work, please itemize the reviewers' comments and provide a point-by-point response to every comment. An exemplary rebuttal letter can be found on at http://www.jctres.com/en/author-guidelines/ under "Manuscript preparation." Also, please use the track changes function in the original document so that the reviewers can easily verify your responses.

Your revision is due by Mar 30, 2021.

To submit a revision, go to https://www.editorialmanager.com/jctres/ and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely,

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Reviewers' comments:

Dear authors,

Your revision has now successfully passed the peer review stage.

However, before we can publish your work the manuscript must be improved linguistically. Please eliminate any language errors and raise the level of the manuscript to meet our

academic English standards, preferably by engaging a native speaker.

JCTR will not publish manuscripts that do not meet academic writing standards.

Thank you,

Michal Heger
Editor

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

March 16th 2021

Dear Dr. Michal Heger.

Thank you for the opportunity to review the manuscript and for giving us the opportunity of minor revision.
As requested, the text was revised by a native English-speaking text editor, as confirmed by the attached letter. The final version of the manuscript has been loaded into the system.

Best regards,

Ana Clara Souza Oliveira
Lead author - Dental School, Federal University of Minas Gerais, Brazil

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4th Editorial decision
18-Mar-2021

Ref.: Ms. No. JCTRes-D-20-00139R3
"Does ankyloglossia interfere with breastfeeding in newborns? - a cross-sectional study"
Journal of Clinical and Translational Research

Dear authors,

I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Clinical and Translational Research.

You will receive the proofs of your article shortly, which we kindly ask you to thoroughly review for any errors.

Thank you for submitting your work to JCTR.

Kindest regards,

Michal Heger
Editor-in-Chief
Journal of Clinical and Translational Research

Comments from the editors and reviewers: