Author’s response to reviews

Title: Association of infant growth with emergence of permanent dentition among 12 year-aged southern Chinese schoolchildren

Authors:

Hai Ming Wong (wonghmg@hku.hk)

Si-Min Peng (tina_pengsimin@yahoo.com)

Colman McGrath (mcgrathc@hku.hk)

Version: 3 Date: 15 Jun 2018

Author’s response to reviews:

Dear Ms Wollmuth,

Thank you for considering our manuscript OHEA-D-17-00519R2 entitled "Infant growth and permanent tooth emergence at 12 years of age (old) / Association of infant growth with emergence of permanent dentition among 12 year-aged southern Chinese schoolchildren (new)". With regards to the comments, we provide the following explanation:

Editor’s comments:

Please ensure you check the proofs carefully for typos:

e.g. page 3 line 69 ("as important" not "its...") Moreover, life course epidemiological studies of oral

70 health are gradually recognised its importance

page 4 line 87

when the subjects grew up (check ??when subject reached 12 years ??).

Response: Thank you very much for your advices. We have modified our manuscript accordingly and checked carefully for typos.
Reviewer reports:

Fatih Öznurhan (Reviewer 3): Thanks to the authors because big data always come with big statistical problems, big results and big discussions. Congratulations.

- Page 2 (inner) line 43: As the authors write on Conclusion part the should be ended with probabilities like "may or might"

Response: Thank you for your comments. We have modified line 43 accordingly as “Birth weight and infant growth during the first three months of life might be associated with permanent tooth emergence at their 12 years of age.”


Response: We have modified line 84 as “To our knowledge, no study has been carried out to explore the association between infant growth and the permanent tooth emergence when the subjects reached 12 years old.”

-Line 88: 12 months to 360 months, so many thing could be happen in the life, lets read

Response: We think the reviewer may want to delete this comment.

-Page 4- 5, line 97,98: what do the authors mean with this sentence? If we understood the year 1997, that means 1997+13=2010 and the year was too old to the manuscript. If we understood 8327, the authors’ data were 485?

Response: This is a brief introduction of the longitudinal Chinese birth cohort ‘Children of 1997’ requested by Reviewer 1 in the 1st Review. The sample of our study was drawn from this birth cohort.
- I am sorry again and again. Was this article a part of references 21 and 22?

Response: References 21 and 22 are for introduction of the longitudinal Chinese birth cohort ‘Children of 1997’. To avoid confusion, we have deleted “To our knowledge, this is the first study conducted to investigate the relationship between growth trajectories and erupted permanent tooth number, thus no data can be referred to calculate the sample size.” after references 21 and 22.

-Line 101: But when authors take a p value 0.0001 or more the finding will be more meaningful which was supported by significant findings. Did the authors choose a p value like 0.0001 before the study?

Response: To be consistent, we have followed Reviewer 4’s advice and modified Line 101.

-line 107: What was the number of HongKong population? According to the world bank statement nearly 7.5 million. Do 650 children reflect the population?

Response: Yes, as we stated on Line 94 “The participants were randomly selected from a longitudinal Chinese birth cohort ‘Children of 1997’.”

-Page 8, line 194: Weren't there an early birth or premature birth? Did the authors select these data from archives? Because some studies (Sahin F, International Journal of Paediatric Dentistry 2008; 18: 262–266, Fadavi S) declared that early birth or prematurely born babies had delayed tooth eruption. If so please declare that these data were obtained just from 37-41 weeks but a result of this the authors cannot generalize the results to the population

Response: We have modified paragraph 6 in Discussion as “Only term births (gestation ≥ 37 weeks) were included to generate the growth trajectories in the study population because different trajectories have been found for term births and preterm births [25]… Thus, the finding of the study may be compromised by the lack of preterm birth participants which is a significant marker of inadequate nutrition during fetal development and “prolonged” growth trajectories. The results of this study cannot be generalised to the population.”
-Page 9 line 211: What about the other 29 students? 241+244=485 There are too many number (8327, 7381, 470, 650, 685, 514, 668...) to learn data size of this study please simplify them

Response: Thank you for pointing out our mistakes. We have corrected those numbers.

-Page 9 line 213: Higher weight were included or the participants were higher weight? Please write and discuss it

Response: We found that included participants had a higher weight-for-age z-score at birth, 3 months and 12 months than the excluded participants. This was out of our control so we could only report it.

-Page 9 line 217: delete see and use"( )"

Response: We have modified line 217 accordingly.

-Page 9 line 218 This data is an expected result. But when the authors give the results monthly it will be more interesting and more useful like “table 2” in Ozmurhan et al, Time and sequence of eruption of permanent teeth in Ankara, Turkey pediatric dental journal 2016;26:1-7

Response: Thank you for the suggestion. We did not collect our data monthly. We have discussed this limitation in Discussion.

- Page 12, line 291: and these results shows correlation with this sentence "This result may suggest that growth parameters in the early months of life when growth rate is fastest may affect the teething time.
Response: Thank you for the advice. We have modified paragraph 3 in Discussion accordingly.

- Page 14 line 336: Where there are reference? There are several parameters used in Pediatrics and when they take into account all measurements they show the percentiles in Pediatrics which shows the growth is enough/low or faster and the reference 36 is too old to say something on this patterns according to the developing technologies.


- Page 15 line 357: Please check abstract section

Response: To be consistent with Abstract, the sentence in Conclusion has been modified as “The first three months of life might be a critical period for the permanent tooth emergence later in life, while slow growth during this period of time might have beneficial effects on tooth emergence.”

Ashraf Shaweesh (Reviewer 4): General

This is a good article that is well designed with successful use of statistics. However, it is strongly recommended that the work be reviewed by a native English speaker to correct the many mistakes. There are many important points to be addressed as per my comments below.

Response: Thank you for the comments. The manuscript has been reviewed by one of the authors who is a native English speaker.

Title:

"Infant growth and permanent tooth emergence at 12 years of age"
Title may be changed to "Association of infant growth with emergence of permanent dentition among 12 year-aged Southern Chinese (or Hong Kong) schoolchildren"

Response: Thank you for the advice. We have changed the title accordingly as “Association of infant growth with emergence of permanent dentition among 12 year-aged southern Chinese schoolchildren”.

Abstract
Line 25: perhaps more explanation is required on why there is a need to investigate the relationship between permanent tooth emergence and infant growth.

Response: Line 25-26 has been modified as “There is a need to comprehensively investigate the relationship between tooth eruption and infant growth to explain the theory of tooth emergence.”

Line 44: The conclusion could benefit from adding a sentence on the clinical relevance of such an association. Otherwise, the conclusion would simply look like a result.

Response: One sentence has been added to the end of Abstract as “This association may be applied in the assessment of risk for dental caries or malocclusion”.

Introduction

Response: We have corrected the sentence as “Moreover, life course epidemiological studies of oral health are gradually recognised as important to identify pathways of oral health, so as to
inform best practice of oral health care services for children [8].” We have cited the paper by Shaweesh and Al-Batayneh (2017) as reference 19.

Line 81: a reference is needed on the in-utero data

Response: We have added a reference which is numbered 20 in the reference list.

Methods

Line 101: "thus no data can be referred to calculate the sample size." I think statistical tests can be applied to calculate sample size irrespective of whether similar researches have been published earlier

Response: Thank you for your advice. We have modified “Study Population” accordingly.

Line 111: "Participants of the 'Children of 1997'". Is there any publication to cite related to this mega-project?

Response: Yes. They are references 21 and 22.

Line 123: "The clinical examination was conducted in the student's school with within two", delete "with"

Line 125: "to rinse their mouth before they lying" remove they.

Line 131: "plane" should be "plain".

Response: Thank you for your advices. We have modified our manuscript accordingly and checked carefully for typos.
Line 138: "Congenitally missing teeth were unavailable to assess as this study was conducted in the field where no radiographic equipment was available" This is worth some discussion in the discussion section. What about teeth that have been extracted? Were there any attempt to adjust for such factors?

Response: We have modified Data Collection as “Hypodontia and extractions were unavailable to assess as this study was conducted in the field where no radiographic equipment or dental history was available” and the second last paragraph in Discussion as “In addition, the present study was school based where radiographic examination and dental history were unavailable to determine if the un-emergence of teeth was due to hypodontia or extraction. However, the prevalence figures of hypodontic second molars and extractions due to caries/orthodontic treatment were reported to be nearly 0% [35-36]. Therefore, the results of this study are unlikely to be affected significantly by this limitation”.

Line 140: check grammar please

Line 142: check grammar please

Line 144: "picked out" is not a proper term.

Line 143: "To guarantee the consistence within and between examiners, blind duplicate oral exam was conducted among 10% participants who were randomly picked out from the study sample" do you mean you did an inter-examiner reliability test. This is not so clear here. Please move the methods on the inter-examiner reliability from results section to the methods section and just keep the outcomes of that in the results section.

Response: We have modified Data Collection as “Even though the diagnostic criteria for the emergence of teeth have been clearly stated and discussed prior to the survey, it could still be difficult to determine whether a tooth has emerged or not when it was close to emergence or has just barely emerged. To guarantee the consistence throughout the study, blind duplicate oral exam was conducted among 10% participants who were randomly selected from the study sample to examine the intra- and inter-examiner reliabilities.”

The outcomes of “Sixty eight subjects were re-examined to assess the level of examiner reliability throughout the study. The intra-examiners’ intra-class correlation coefficient (ICC) was 0.99 for both examiners and the inter-examiner reliability was 0.97, indicating excellent
agreement within and between the examiners.” are reported in Results because we did not know the exact number of 10% of the participants before we completed the survey.

Statistical analyses: properly used, however, could have benefited from editing the language used.

Response: The manuscript has been eddied by one of the authors who is a native English speaker.

An alternative approach would have been to investigate the association between infant growth and individual tooth emergence. This is impossible to be done at this stage because the cohort is 12 years of age. Studying association with individual tooth emergence requires recruiting children with different ages from 6 - 12 years and dividing them into age groups. Although it is too late now, this may worth some discussion in the discussion section.

Response: We have discussed this in the Discussion as “The results should be treated with caution because this article described statistical associations between birth weight development and tooth emergence in a cross-sectional sample. Using cross-sectional design with a one-time measurement on a phenomenon like growth and tooth emergence could not yield a cause-effect conclusion. However, it provided hints for further studies, in terms of studies with multiple age groups, longitudinal studies, as well as experimental studies. Moreover, the dichotomous analysis of tooth emergence status limited detailed exploration of individual tooth eruption though it is methodologically very difficult to collect data of the exact emergence time”.

Results:

Line 209: "agreed" children did not agree but their parents / guradians did. This has to be made clear in the methods as well.

Response: We have checked Methods and modified line 209 as “The response rate was 76.9% as 514 written consents were obtained from 668 parents”. 
When the effects of birth weight and growth rates during the first three months of life on permanent tooth emergence were further investigated for each tooth type (Table 6), significant association was found only for maxillary second molars. The significance was further confirmed by logistic regressions (Table 7)."

Firstly, authors should be cautious about using the word "effect" as they just demonstrated a relationship.

Secondly, given the age group of the subjects, studying the relationship of infant growth on individual teeth is impossible without including other age groups from 6 - 12 years. By 12 years of age all teeth apart from second molars and upper canines in some children (like underweight) will have been erupted. So it may be possible to test for association with second molars and canines but not the rest of the teeth. At 12 years of age, what is the chance of seeing NORMALLY unerupted mandibular incisor? Answer: zero %. This is why there is no need to discuss association with eruption of individual teeth, otherwise there will be a very clear bias. Instead, in the discussion section you can discuss the impracticality of studying individual teeth as a limitation in your study and provide some recommendations.

Response: We have replaced the word “effects” with “association”. We have discussed this issue and provide recommendations as “The results should be treated with caution because this article described statistical associations between birth weight development and tooth emergence in a cross-sectional sample. Using cross-sectional design with a one-time measurement on a phenomenon like growth and tooth emergence could not yield a cause-effect conclusion. However, it provided hints for further studies, in terms of studies with multiple age groups, longitudinal studies, as well as experimental studies. Moreover, the dichotomous analysis of tooth emergence status limited detailed exploration of individual tooth eruption though it is methodologically very difficult to collect data of the exact emergence time….This suggests that the overall association of birth weight and growth rates during the first three months of life on the status of tooth emergence at 12 years old is mostly attributable to maxillary second molars. It is widely accepted that the age of 12 years is within the normal range for the emergence of 28
permanent teeth and the teeth erupt in a particular sequence. With this knowledge in mind it is not difficult to explain the finding of the significant association because the maxillary second molars are usually the last in the sequence to erupt…. In addition, the present study was school based where radiographic examination and dental history were unavailable to determine if the un-emergence of teeth was due to hypodontia or extraction. However, the prevalence figures of hypodontic second molars and extractions due to caries/orthodontic treatment were reported to be nearly 0% [35-36]. Therefore, the results of this study are unlikely to be affected significantly by this limitation…. Further investigations, especially longitudinal studies to monitor growth changes such as infant’s growth in length, and exact timing of individual tooth emergence, as well as experimental studies on the molecular mechanisms triggering dental development are required to expand our knowledge in tooth eruption/emergence.

Line 348: growth?

Response: We have replaced the word “grow” with “growth”.

The impact of the environmental factors on the emergence of permanent dentition has neither been adjusted for in the multi-logistic regression model not discussed adequately in the discussion section. Such factors include body weight for age, body height for age, nutritional factors, and Body Mass Index. Please see:


Response: We have included this as reference 38.

Conclusions

Line 356: avoid terms such as "more certain" use "more likely"

Response: We have corrected it accordingly.
Line 359: "These findings may have clinical significance of predicting dental events later in life in terms of the risk for dental caries due to prolonged exposure in the oral cavity, and the probability of malocclusions due to unfavorable eruption sequence."

Other clinical relevance include forensic investigations.

Response: We have included this in Conclusions.

The clean copy of the manuscript is attached. Thank you very much for your consideration.

Yours sincerely,

Dr Hai Ming WONG
DDS, MDSc, AdvDipPaediatrDent, PhD, M Paed Dent RCSEd, MRACDS (Paed), FCDSHK (Paed Dent), FHKAM (Dental Surgery), FDS RCSEd
Clinical Associate Professor
Paediatric Dentistry & Orthodontics,
Faculty of Dentistry,
The University of Hong Kong
2/F Prince Philip Dental Hospital,
34 Hospital Road,
Hong Kong
Tel.: +852-28590249
Fax.: +852-25593803
E-mail: wonghmg@hku.hk