Author’s response to reviews

Title: Adolescent deliveries in Rural Cameroon: an 8-year trend, prevalence and adverse maternofoetal outcomes

Authors:

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Author’s response to reviews:

Reviewer reports:

Reviewer #1: The paper is of interest as it contributes to the overall understanding of outcomes of adolescent pregnancy in rural settings.

Authors’ response: Thank you for your kind comments.

However the paper lacks in-depth analysis and explanation of the findings.

Specific comments

Reviewer’s comment 1: Background - The background would be enriched by some primary analysis of data e.g. from census or DHS/MICS - current references are from previously published data.

Author’s response 1: Thank you for your suggestion the back ground has been updated with report from the DHS/MICS, 2011. It is noteworthy that this is the latest report.

Reviewer’s comment 2: Line 35 - wrong contraceptive - is a judgment call -.

Authors’ response 2: Thank you for your comment. This sentence has been rephrased to imply that lack of contraception use is associated with adolescent deliveries as the DHS/MICS in Cameroon show that over half of unmarried adolescents do not use an effective contraceptive method.
Action: Sentence modified to read: “Factors such as: customs and traditions that encourage early marriages, poor knowledge on reproductive sexual health, poverty, low self-esteem and lack of contraceptive use (as over half of unmarried adolescents do not use effective contraception) have been attributed to adolescent pregnancy.”

Reference included.

Reviewer’s comment 3: Line 37 consequently - infers that the outcomes are a result of the practices in the previous sentence, this needs to be rephrased.

Authors’ response 3: Thank you for your comment. This sentence has been rephrased.

Action: The statement now reads, “Delivery in adolescence is associated with higher risks of hypertensive disorders, caesarean delivery, low birthweight…”

Reviewer’s comment 4: Line 47 - analysis of the primary data of DHS/MICS, or census should yield provincial or urban/rural differences.

Author’s response 4: Thank you very much for your suggestions. We have improved the background section with data from the DHS/MICS, 2011.

Reviewer’s comment 5: The last sentence of the background should be rewritten - is marriage protective?

Authors’ response 5: Thank you for your comment. A recent study carried out in a semi-urban region in Cameroon – Buea showed that married adolescents were not precluded from having adverse pregnancy outcomes when compared with single adolescents; thus marriage was not protective.

Action: The last statement has been rewritten, and it now reads, “…misconception that married adolescents are more equipped to deal with the burden of pregnancy than their single counterparts. However, authors have reported no difference in the complications of adolescent deliveries between married and single adolescents.”

Reference has been included.

2. Methods:
Reviewer’s comment 6: The methodology needs greater explanation of the total expected delivering in the health district, proportion conducted overall in health facilities, and the proportion conducted in the 2 facilities selected.

Authors’ response 6: Thank you for your comment. According to the chief of bureau for health for the Oku health district, the district office receives reports of averagely 900 deliveries per month. Forty percent of these deliveries are conducted by the District hospital and the Kevu health centre in roughly equal proportions.

Action: The methods section has been updated to contain these details.

Reviewer’s comment 7: The numbers at the hospital and health centre and if there is a referral system between the HC and hospital. Also if the hospital receives referrals from other HCs.

Authors’ response 7: The system of referral is from the primary health care centres to the district hospital. However, this system of referral is ineffective as some patients prefer to travel to nearby district hospitals due to: inaccessibility of the main district hospital as a result of the mountainous topography of this community.

Action: The number of delivery at the Hospital and Health centre has been updated in the methods section. The referral system has also been included in the methods section.

Reviewer’s comment 8: As caesarean section is used as one variable, do we assume this is only conducted at the district hospital? The Health Centre is staffed by a nurse - ? trained in midwifery?

Having an overall picture of the population from which the sample is taken, will enable better interpretation of the results.

Authors’ response 8: Thank you for your comments. The Health centre was headed by an experienced nurse who with no training in midwifery. Caesarean sections were done only at the district hospital.

Action: This section has been modified according to your comments, and now reads, “The Oku district hospital was managed by a single doctor, while the Kevu primary health centre was managed by a nurse who was not trained in midwifery. Consequently, all caesarean sections were done at the district hospital.”

3. Data collection:
Reviewer’s comment 9: The authors only included 77% of the total deliveries recorded during this 9 year period. This is potentially a huge selection bias. At least including the rationale for the exclusions will be important. (have they been separately analysed and been shown there is no difference between adolescents and women >20 years).

Authors’ response 9: Thank you for your comment. To increase to quality of our study, we tried as much as possible to ensure that the records we collected were accurately recorded. Records without maternal age (82% of excluded cases), babies born before arrival (3.1% of excluded cases), birth weights less than 1000 grams (4.3% of excluded cases), multiple deliveries (4.5% of excluded cases) and deliveries before 28 weeks gestation (6.2% of excluded cases) were indeed excluded from the sample considerably reducing the sample size. Considering that 82% of the excluded cases had no maternal age, it was difficult to know whether the excluded cases contained more or a lesser number of cases of adolescent delivery.

Action: The various proportions of the reasons for excluding records has been added to the methods selection and the limitation of the selection criteria has been discussed in the discussion section.

Reviewer’s comment 10: Suggest the data on 2nd degree perineal tear be separated from the 3rd and 4th degree tears, as the long term adverse outcomes of these are much greater.

Authors’ response 10: Thank you for your comment. We could not present 3rd and 4th degree perineal tears separately as the registers where the records were assessed from grouped 2nd, 3rd and 4th degree tears under a single option.

4. Results:

Reviewer’s comment 11: Line 19/20 the description of the married adolescents about - infers the marital status is not known in all. Is this the case?

Authors’ response 11: Thank you for your question. We used the word “about” because we rounded up 40.5% to 41%. We have rewritten this statement to clear all doubts.

Reviewer’s comment 12: There is no analysis of education level in the results tables - this will be important also in comparison of married and unmarried adolescents.

Authors’ response 12: Thank you for your comment. We could only collect data present in the delivery registers. The level of education was not presented because it was not recorded in the registers.
Reviewer’s comment 13: Given the downward trend of adolescent deliveries over the years of the study, it would be useful to include information on whether there have also been trends in the adverse outcomes, or differences in referral patterns, health facility usage and CS rates. If there is no difference this can be commented on without necessarily adding to the number of tables. In addition the difference between deliveries in the health centre vs the hospital. This will add to the depth of the paper and an understanding if some of the adverse outcomes are also associated with the level of facility.

Author’s response 13: Thank you for such a pertinent suggestions. We evaluated the trend in the prevalence of adverse maternal and foetal outcomes of adolescent delivery over our study period. Consequently, we have updated the result section, and figure 1 to depict the trend in adolescent deliveries and significant adverse outcomes of adolescent deliveries. Information on the referral pattern and CS rates have been reported in the have been updated in the method in result sections accordingly.

5. Discussion:

Reviewer’s comment 14: The discussion of the trends in adolescent pregnancy over time in relation to the rest of the country, and in relation to the government policies and programmes should be included. The current discussion on these findings line 21-32 indicated the government programmes are warranted, but not if they are already being implemented.

Authors’ response 14: Thank you for your comment. The trend in adolescent pregnancy in the country has been discussed and governmental programmes have been elucidated in the discussion section.

Action: This section of the discussion has been modified to read: “This downward trend in the prevalence corresponds with the decreasing prevalence of adolescent girls who have already commenced their reproductive life in Cameroon, as reported by the World bank and investigators of the Demographic and Health Survey (DHS), 2011 [6,22]. Over the years, the Ministry of Public Health in Cameroon has developed policies to address sexual reproductive health such as: the National Population Policy in 1992, the “Maternal and Child Health Care and Family Planning Services Policy and Standards” in 1995, and the “Roadmap for Reduction of Maternal and Neonatal Mortality in Cameroon 2006 – 2015” [23]. It is noteworthy that none of these policies specifically address adolescent pregnancy and its associated burden [23]. The “Roadmap for Reduction of Maternal and Neonatal Mortality in Cameroon 2006 – 2015” was supported by the bodies like the WHO, UNICEF and United Nation Development Programme (UNDP), and had as main goal to ameliorate delivery of reproductive health care services, procuring of qualified health personnel, while enhancing capacity building and family planning services for
Cameroon’s communities [24]. The “Roadmap” has been the main pillar to meet the reproductive and sexual health of the Cameroonian population. To prevent adolescent pregnancies, the “Roadmap” in association with the Department in-charge of Health Promotion programmed education of youngsters at community levels on how to prevent adolescent pregnancies. However, the details on how these youngsters were to be educated was not detailed in the “Roadmap”. The lack of detailed specific objectives to on how to prevent adolescent pregnancy may have attributed to Cameroon not attaining the Millennium Development Goal (MDG) 5. Amelioration of government policies to curb the prevalence of adolescent pregnancy and its related burden may go a long way in attaining the Sustainable Development Goal (SDG) 3 set for the year 2030 [25]. Indeed, the downward trend in the prevalence of adolescent deliveries was associated with a significant, downward trend in the prevalence of neonatal asphyxia at the 5th minute of life. This depicts the impact of public health interventions on the adverse outcome of adolescent deliveries.”

Reviewer’s comment 15: Given the comments on the methodology, data collection and results above, the discussion can be enriched by further analysis as suggested.

Authors’ response 15: Thank you for robust comments. This has greatly enriched our manuscript.

6. Study limitation:

Reviewer’s comment 16: This limitation is only valid if the proportion of adolescents using facilities are the same as those of adult women, also if the 25% of files excluded from the review do not have a higher proportion of adolescents. These points should be addressed.

Authors’ response 16: Thank you for your comment. We have clarified the above limitation. Also, as explained above, because some of the records were excluded due to their incomplete nature, we could not ascertain if they had a higher proportion of adolescents.

Action: This section now reads: “Also, this study estimated the prevalence of adolescent deliveries. This might not represent the true prevalence of adolescent pregnancies as we did not include abortions and we could not estimate if the proportions of adolescents using health facilities were similar to those of adults.”

7. Conclusion:

Reviewer’s comment 17: The conclusion needs to include some explanation of the downward trend over time, and to be adjusted in light of comments above.
Authors’ response 17: Thank you for your comments. The conclusion has been modified accordingly.

Action: This section now reads: “Our study reveals a high prevalence of adolescent deliveries in this rural community in Cameroon. Adolescent mothers are more likely to sustain a second - fourth degree perineal tears during labour and their babies have a higher tendency of being asphyxiated and/or having LBW. Married adolescents were not precluded from having adverse maternofoetal outcomes when compared with single adolescents. The prevalence of adolescent deliveries has experienced a remarkable downward trend, with a corresponding decreasing trend in the prevalence of neonatal asphyxia at the 5th minute of life in babies born to adolescent mothers, over an 8-year period. The entire nation is experiencing a downward trend in the prevalence of adolescent pregnancy. Despite this downward trend, the prevalence of adolescent deliveries in this rural community remains high. We recommend a reinforcement of the existing government-based policy to specifically target key indicators of adolescent pregnancy, in order to curb its related complications especially in the rural areas.”

Reviewer’s comment 18: Tables - a number of the tables contain simple errors in the totals, percentages, definitions (LBWt is < 2500g). These all need to be carefully reviewed and addressed.

Authors’ response 18: Thank you for your comment. The tables and their percentages have been revised have been revised.

The WHO defined the cut-off for LBW as <2500g but stated that this cut-off should be used for epidemiologic purposes and not clinical as birth weight varies across regions. They advised that each region should adopt its own cut-off for clinical use. In Cameroon, Njim et al (Njim T, Atashili J, Mbu R, Choukem S-P. Low birth weight in a sub-urban area of Cameroon: an analysis of the clinical cut-off, incidence, predictors and complications. BMC Pregnancy Childbirth 2015) established and validated a cut-off of ≤2600g in semi-urban regions of Cameroon.

They also established and validated a similar cut-off (≥3850g) (Choukem S-P, Njim T, Atashili J, Hamilton-Shield JP, Mbu R. High birth weight in a suburban hospital in Cameroon: an analysis of the clinical cut-off, prevalence, predictors and adverse outcomes. BMJ Open. 2016) for HBW.

That is why we chose to use these region-specific definitions in our study.

Thank you accepting to review our manuscript.
Reviewer #2:

Reviewer’s comment 1: Page 3, 1st paragraph: "In Cameroon, adolescent pregnancies have a high disease burden due to its high prevalence and adverse maternal and foetal outcomes": This sentence is confusing; it is not because of its high prevalence that adolescent pregnancies would have a high disease burden.

Authors’ response 1: Thank you for your comment. The statement has been corrected.

Action: The statement now reads: “In Cameroon, adolescent pregnancies have a high disease burden due to its association with adverse pregnancy outcomes”.

Reviewer’s comment 2: Page 4, 3rd paragraph: "reviewed the delivery registers": Knowing how difficult it can be in rural areas to collect data on anything, how reliable is the info from the delivery registers? Up to what level were they properly completed/monitored? Do you know if in the 8 years, the health care staff have been the same, or have they been replaced? Is there proper training on admin and records keeping for health care staff in rural Cameroon?

Authors’ response 2: Thank you for your comment. After each delivery, the records were filled immediately by the doctor (district hospital) or the nurse (health care centre) on duty. The records are reviewed at least twice monthly by the district medical officers. Over the years, though the health personnel might change, there are usually refresher courses from the district health service to enable new personnel to fill records.

Reviewer’s comment 3: Page 4, 3rd paragraph: "birth weight less than 1000 grams, multiple deliveries and deliveries before 28 weeks gestation": What is the reason for excluding these in the research?

Authors’ response 3: Thank you for your comment. Since we were assessing adverse outcomes of adolescent deliveries (expulsion or extraction of newborn and membranes at term), we decided to exclude all pregnancies which had not attained viability (Weight < 1000g and gestational age <28 weeks in our setting). We also chose to include only singleton deliveries to avoid issues of multiple entries with multiple gestations and due to the fact that multiple gestations inherently have adverse pregnancy outcomes when compared with singleton deliveries.

Reviewer’s comment 4: Page 5, 2nd paragraph: "girl aged 13-19 years": It may help to explain your age group further. At the end of the document, your table shows 'age <20 years’, so I assume you are looking at early adolescence too (age <13 years). With this sentence here, are we to assume there were no pregnancies/deliveries for girls under the age of 13? Even though these
early adolescence pregnancies are less common, the complications with these pregnancies/deliveries are almost always more severe. And that is what you are looking at in this paper, the link with complications.

Authors’ response 4: Thank you for your comment. The minimum age recorded in this study was 14 (n = 2). As a result we could not run a bivariate analysis.

Action: This has been highlighted in the result section in the result section to read: “We noted only two cases of delivery in girls below 15 years of age.”

Reviewer’s comment 5: Page 5, 2nd paragraph: "second cause of death among girls age 15-19 years worldwide": Is it different for girls younger than 15? I know it is a quote from another research, but it only covers the last half of the range of adolescence, what about those that are 10-14?

Authors’ response 5: Thank you for your question. We have included a statement on the consequence of pregnancy in adolescent girls below 15 years.

Action: The statement now reads: “In fact, the complications of adolescent pregnancy and child birth is the second cause of death among girls aged 15 – 19 years worldwide [2], and this is even 2.5 times higher in girls below 15 years of age [3].”

Reviewer’s comment 6: Page 6, 2nd paragraph: "Retrospective-register analysis": By doing this, there can be the assumption of accurate/proper recording over the span of 8 years. Has the health care staff been the same in that period, or were there different people, with different standards towards monitoring births and keeping records? What could be the margin of error by choosing to look back over a period of 8 years without knowing the consistence in the quality of the data?

Authors’ response 6: Thank you for your comment. We acknowledged in the limitations section the potential for inaccurate recording and the margin of error involved in doing so. Despite the fact that the health personnel have changed over this period, the registers are reviewed by the district health service at least twice yearly and there is always refresher courses and training provided to personnel on how to accurately fill the records.

Reviewer’s comment 7: Page 7, 2nd paragraph: "We noticed a significant downward trend": Beyond the data from the registers, was there any literature review done, or interviews taken regarding reasons for this show of decline? Was there a launch of a strategic plan for RH/FP? Increase in service delivery or on the job training provided? Cultural change being pushed by traditional and religious leaders? New policy aiming to reduce teen pregnancies?
Authors’ response 7: Thank you for your question. We have discussed the government policies addressing reproductive and sexual health in Cameroon, and we believe this could have altered the trend in the prevalence of adolescent deliveries to what we witnessed in this study. Truly, the most recent policy to address RH/FP was launched 3 years prior to our study. Unfortunately, this policy lacks specific goals aimed at reducing the prevalence adolescent pregnancy. We acknowledge that a qualitative study to investigating factors such as cultural changes, religious influence and increased service delivery contributing to this decreasing prevalence. However, we could measure such variables in a quantitative study like ours. But, we have added this as a recommendation for prospective research.

Action: The last part of the conclusion section now reads: “Also, studies to evaluate qualitative factors such as cultural changes, religious influence, increased service delivery that could explain the observed trend in the prevalence of adolescent deliveries are warranted in this sub-division.”

Reviewer’s comment 8: Page 7, 3rd paragraph: "Indeed, almost half of the adolescents in our study were married": This point is important, showing that there is no difference between married and unmarried teens and their pregnancies/deliveries from a scientific point of view. From a social behavior change angle, this shows the need to also address SRH needs for unmarried adolescents, who often get less health care support than their married counterparts.

Authors’ response 8: Thank you for this important suggestion. The discussion section has been updated accordingly.

Reviewer’s comment 9: Page 8, 3rd paragraph: "who were like to have...": change to: who were likely to have

Authors’ response 9: Thank you. We have corrected.

Reviewer’s comment 10: Page 8, 4th paragraph: "caesarean deliveries was unacceptably low": Is this linked to the fact that the whole region only had one doctor in one health center and one nurse in the other? Or because of infrastructure (lack of)? Or cultural believes?

Authors’ response 10: Thank you for your question. We have updated the discussion section to suggest reasons for such a low caesarean section rate.

Action: This section of the conclusion now reads: “This was probably due to the fact that caesarean sections were carried out only in the district hospital where the doctor was stationed, and that caesarean deliveries were only recorded as from the year 2014. Also, factors handicapping a smooth referral system in this district could account for such a low caesarean
section rate. Indeed, the mountainous topography which results in longer referral time, and a relatively high cost of transportation greatly hinders a smooth referral system in this district; consequently, health facilities distant to the district hospital, like the Kevu health centre, prefer referring cases of emergency caesarean section to nearby districts.”

Reviewer’s comment 11: Page 13, table 1: "multigravida and multiparous": In both words, the definition is clear, and the terms are used correctly. I wonder though, was this the way the register asked for info? Or was info available on every entry regarding the age and number of pregnancies? As it is in this table, it doesn't allow the reader to see any difference between a girl that had 2 pregnancies/deliveries or 4, prior to the age of 20. For example: a girl who had 4 pregnancies at the ages of 13, 14, 16 and 17 would be put in the same group as a girl who had 2 pregnancies/deliveries at the ages of 18 and 19. It only takes an extra row and column in a table to show this extra info, and it will give a broader picture that is a lot more detailed in its information. It could avoid critics minimizing this data with half explanations.

Authors’ response 11: Thank you for your comment. We subcategorized adolescents into early and late adolescence to address this query.

We are grateful to the reviewers for the time they sacrificed to correct our paper. Their seasoned comments/corrections and suggestions have greatly improved our paper.