Reviewer’s report

Title: Is Unplanned out-of-hospital birth managed by Paramedics 'Infrequent', 'Normal' and 'Uncomplicated'?

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Reviewer: Gayle McLelland

Reviewer's report:

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Title: Is Intrapartum Care Provided by Paramedics 'Normal' and 'Uncomplicated'

General comments:

Thank you for the opportunity to review this very interesting article on a very important issue of intrapartum care provided by paramedics. Paramedics certainly transport and care for intrapartum but this is a very unreported area of research.

This manuscript discusses only the maternal outcome / clinical presentation not the babies in paramedic care. Is there a reason for this? Are the authors planning on discussing this separately?

The manuscript covers labour, birth and the immediate postpartum period. These are physiologically three very different periods in during childbirth including labour has three phases that clinically present very differently. For this reason, the treatment that paramedics give should be different at each period. However, this is not reflective in the results. The authors have reported only pain and clinical presentation at one point (? Initial pain score and vital signs) but have not considered the context of that pain. This then limits ascertaining any differences in the management provided by paramedics at the different periods and whether this management appears appropriate. For example if a woman in second stage and is pushing about to deliver, it is not recommended they receive pain relief. However, It would be interesting to note how many women did receive pain relief during second stage in the prehospital context.

Title: Is Intrapartum Care Provided by Paramedics 'Normal' and 'Uncomplicated'

As the authors have included women who have given birth prior to arrival of paramedics, they are discussing women in the immediate postpartum period. The title should reflect this.
Women who gave birth before arrival of paramedics are no longer intrapartum but postpartum as it commence after the birth of the baby.


Abstract

The abstract appears to be a synopsis of the paper that has been written.

The results are intrapartum and immediate postpartum.

In the abstract (like the methods) the authors claim to undertake statistical analysis using chi-squared and Wilcoxon rank sum but it is not clear in the results when these tests were undertaken.

Introduction/Background

Overall the introduction introduces the topic and defines the relevant terms. I think some of the assertions that have been made require supporting evidence or references. If the evidence is not available, they need to be very clear that it is anecdotal.

For international readers, the introduction / background should provide some context so should describe the study setting of the geographical land mass of Queensland, the population and the annual number of births for the two years. I realise some of this is described later in the paper but the authors should provide this earlier.

Page 3:

* I agree that paramedics play an important part in providing intrapartum care to women in the out of hospital environment. Whilst paramedics certainly see these cases infrequently, there is no evidence that they consider them normal or uncomplicated. An axiom or postulate is a statement that is taken to be true but there is no evidence to suggest that is it is true. I think it would be better to clearly acknowledge that this is considered anecdotal. Certainly in the planned birth setting many of these birth are consider low risk but not in the out of hospital setting.

* The definition of BBA is partly correct. A BBA is a birth that occurs in an unplanned setting or with an unplanned attendant. Hence a planned home birth can result in a BBA if the pre-organised midwife is not at the birth.
Whilst there is a paucity of literature in Australia on the paramedic management of women in labour and/or giving birth, there is some and this should be cited:


McLelland, G., McKenna, L., Morgans, A. (2016) Paramedics attendance at homebirths: A one year case study, Midwifery, Churchill Livingstone, United Kingdom (Article in Press) doi.org/10.1016/j.midw.2016.02.007

Page 4:

* The reference for the incidence of women who birth with paramedics in attendance is reference 7 not reference 2.

Aims/Objectives

Page 4: The objectives of this study are clear but I am not sure they align with the title of the paper. The paper did -

* determine the number of cases involving women in labour and who gave birth

* describe the incidence of births prior to and during paramedic care

* detail risk factors and complications but only those that were describe in the QAS guidelines

* identify paramedic practices for intrapartum care - but only the initial pain scores not the final scores

* the paper also describe the physiological presentation of the women encountered e.g. vital signs

Methods

Page 4 - 5: The methods are good. Although the case records for mother and baby are supposed to be separate, It would be interesting in the analysis to know how many were separate and how many were recorded in the one record.

Statistical analysis appears satisfactory.
When reporting the results could you be clearer about which tests were performed when i.e. when did you do the Chai square and Wilcoxin rankedsum tests? What was the result? Was there any statistical significance (or not) in these tests.

When performing the content analysis of the free description was this recoded into numerical data to enable quantitative analysis. If so this should be clearer.

Prior to manually sorting was there any exclusions electronically e.g. age

Results

There seems to be some blurring between reporting the data for this study and the information that should be included in the discussion.

Page 6 -9:

* Please state the number of cases during the period. The percentage represented of the QAS caseload should be in the discussion. I'm not sure why you have reported 413 neonatal records when you don't report on any neonatal outcomes. It would be good to have some idea of the outcome for the babies - e.g. initial and final APGAR scores. Interestingly you say there were 618 births but there were only 413 records for neonates. This would definitely suggest that that paramedics are not always recording this data separately as previously ascertained by the authors. This should be noted in the discussion.

* The cross tabulation of age groups and regions was interesting but not one of the aims of the paper - It should be an aim - e.g. to identify the relationship between high risk women and geography and paramedic transportation. It would be interesting to note the ambulance service resources in those regions.

* The risk factors found- should be reported in the results section and the discussion about not being mandatory and that you interpret these cases as being reported. The results do not indicate that the risk-factors are being recorded by paramedics. They indicated that they are being reported by some paramedics so they are the minimum number of cases reported. You actually don't know the actual number of cases. This should be further discussed in the discussion.

* As noted above, it is interesting that you decided on only reported two maternal outcomes. This should be clearer in the aims of the paper. Did you really report outcomes or the clinical presentations of the women? You also reported the paramedic management i.e. the pain management but there was not a report of the outcomes from the management given?
* I agree it is not possible to report when the pain scores were given in relation to the contractions. Reporting the pain scale is useful but it seems you only reported it in one point in time. Is it possible to know if there are any differences between the initial and the final pain scores? This may give an indication of the effectiveness of the treatment.

* Although paramedics are unable to perform a vaginal examination, they often record the frequency and length of contractions. There is a correlation between the timing of contractions and the phases of first stage of labour. Did the paramedics in this study document the contractions? Is there any way to group the women into early or late labour and those who gave birth to ascertain which women received pain relief? This gives an indication of paramedics' judgement.

* How many women who gave birth in paramedics care received pain relief? This can impact the care received by the baby? As mentioned above, can you explain why this manuscript did not examine the outcomes of the babies born in paramedic care.

* The previous point reflects my thoughts on the vital signs as well. It seems that the vital signs was only done at one point in time As paramedics often report vital signs in at least two points in time initial and final vital signs, I think it would be useful to report any possible effects of paramedic care.

* Again there was some blurring between reporting the results of this study and interpreting them for the discussion. The results section should only present the results, any interpretation should be left for the discussion.

* As previously noted a birth may have been reported in 10.8% of cases but paramedics did not care for 262 women until the immediate postpartum period not the intrapartum period. As previously mentioned, it is very important to be aware of the definitions of antepartum, intrapartum and postpartum when reporting these results.

* Whilst it is relevant to note that some paramedics reported that women had been seen by a health provider within 12 hours, again it is important to note that this is the minimum number reported because it is not mandated. The importance of this should be discussed in the discussion and there is some literature on sending women home in 'early labour' or 'false labour'. These terms need references.

* Third stage was only recorded in 337 cases but not all the cases. You are hoping that the 129 cases that recorded the birth of third stage were the only cases that the placenta was delivered but you cannot be absolutely sure. You should acknowledge that this data is incomplete and of the cases recorded, the birth of the placenta occurred in 129 cases.

* It was important to note that fundal massage was performed by paramedics but the relationship to the management of postpartum haemorrhage should be in the discussion not
the results section. It is good to note the disproportionate use of fundal massage for women who have not completed third stage and are not bleeding, it should be also be noted that fundal massage should not be performed on women who have the placenta delivered and are not bleeding.

* I am not sure what you mean by "….the maternal status regarding other blood loss…." What are you referring to? Are you suggesting that some women are bleeding for some other cause? Trauma? Surely blood loss from genitourinary trauma would be included in postpartum haemorrhage blood loss

Discussion:

Pages 9-10

* It is good that it has been acknowledged that involvement in intrapartum care is a small percentage of workload but important.

* Re all of the risk factors and the conditions listed in page 9 are to be found in the one reference (17) that has been cited - "Advising on smoking cessation in pregnancy"

* Who would you advise the paramedics to liaise with for transport referrals in Queensland? This should be noted and requires a reference

* A reference is needed for the competition for undergraduate students and birth places. If there is not reference, then it should be acknowledged as anecdotal.

* The discussion appears incomplete. As previously mentioned, some of the results section should be in the discussion.

* There are some points that need to be teased out in the discussion - the poor documentation by paramedics; the implications should be acknowledged and discussed. This has previously been noted in Australian studies for paramedics’ involvement with childbearing women so pregnant and should be discussed. Whilst it is acknowledged as a limitation, this also has implications for paramedic education, practice and research.

* There are some interesting points that have been raised that are not explored in the discussion e.g. the high risk cases in Cape York and the risk associated with this for paramedics in those regions.

* It is noted that you suggest that paramedics be educated about the early warning signs of complications in pregnant women. Do you think it equally important that paramedics have a basic understanding of the normal physiological changes in pregnant women? Some of the
complications especially from intrapartum or postpartum bleeding may be masked by these physiological changes. Or alternatively, paramedics may think there is a complication when there is not.

Limitations:

Page 10.

The poor documentation has been acknowledged as a limitation. Do you have any recommendations to minimise this or manage it. Also it should be acknowledged that these results are for one ambulance service in one state of Australia and should not generalizable to other contexts.

Conclusion:

The conclusion appears satisfactory. However, as the postpartum period can be several weeks the sentence on line 10 should read "…. The immediate postpartum period."

References:

All abbreviations of authors and/organisations in the reference list should be in full e.g. RCOG RCoOaG: Royal college of Obstetricians and Gynaecologists; There seems to be some in-text citations not corresponding to the cited references in the reference list. Please check all references are correct. Could you also check the references are formatted correctly and are not abbreviated incorrectly.

Tables:

Table 1: Is good

Table 2: is a nice table. You have provided a breakdown of the total births in Queensland but have not clearly stated in the text the percentage of those births were attended by paramedics. You have stated that references 14 & 15 as the sources for this table. I am not sure that is correct could you please check.

Table 3: Appears to be taken at one point in time. It would be good to show the initial and he final vital signs.
Table 4: Appears good

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

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