

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	The Incidence and causes of stillbirth in the only tertiary referral Hospital in the Solomon Islands – a hospital-based retrospective cohort study.
<b>AUTHORS</b>	De Silva, Manarangi; Panisi, Leeanne; Manubuasa, Lenin; Honimae, Catherine; Taragwanu, Susan; Burggraaf, Simon; Ogaoga, Divinal; Lindquist, Anthea; Walker, Susan; Tong, Stephen; Hastie, Roxanne

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Bhattacharya, Sohinee University of Aberdeen, Public Health
<b>REVIEW RETURNED</b>	07-Aug-2022

<b>GENERAL COMMENTS</b>	<p>This manuscript presents data on stillbirth rates in a tertiary referral hospital in the Solomon Islands. I have some suggestions for improving the manuscript:</p> <p>In the abstract the participants should be all births occurring in the hospital (i.e. the denominator used to calculate the stillbirth rate. Please clarify what is meant by "such as xx" in the results section. It would be good to present data on the sociodemographic characteristics on the general population if available. Similarly maternal and perinatal conditions identified as causes of stillbirth should also be compared ideally with population prevalence. This will make it a proper cohort study rather than simply an audit of perinatal deaths.</p>
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<b>REVIEWER</b>	Bolnga, John Modilon General Hospital, Obs and Gynae
<b>REVIEW RETURNED</b>	26-Oct-2022

<b>GENERAL COMMENTS</b>	<p>Stillbirth in the Solomon Islands – a hospital-based retrospective cohort study.</p> <p>Reviewer Comment</p> <p>This is a great paper, well written and is so important in the Reproductive Health domain to gauge the audience insights into the difficulties of accurately categorizing stillbirths and the practical difficulties of care in the LMIC such as the Solomon. Congratulations to the study team and lead author of this paper. I have a few comments to make.</p> <p>General Comment</p> <p>1. The paper needs minor revision with the way figures/results are presented in the text. Eg. 79% were married or co-habiting...Begin sentences with words and not numbers or if possible rephrase them.</p>
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	<p>2. Furthermore, none significant results do not need to be reported in the texts as it is there in the table for readers to see and only elaborate on bigger values or of significance that you need to discuss.</p> <p>3. Avoid self-citations and report in the third person</p> <p><b>Title</b> Your title may be too broad and could be improved. You investigated specifically the incidence and causes of stillbirth in the tertiary referral hospital in the Solomon Island, which is not reflective of the entire country stillbirth rate.</p> <p><b>Abstract</b> Adequate</p> <p><b>Introduction</b> Well presented with good paragraph connections, flow and further strengthened with appropriate references. Ends with aims of the current study introduced well. Pg 5 line 88-90. This sentence may have to be introduced into the study setting of the methodology. Also, spell the word four (4) consultants and not just number. Just having two CTG in introduction, signals a bias outcome and therefore may have to be deleted.</p> <p><b>Methods</b>  The study site background needs to be elaborated a bit more to give readers some perspective .eg, labour ward or delivery suite, type of specialists and annual delivery rate etc.  Pg 6 Line 120-124 Sentences repetition needs rephrasing..</p> <p><b>Results</b> Results satisfactorily presented. Table title, column heads and data categorised well for clarity.  Text results are appropriate as stated earlier, but insignificant data does not need to be repeated in text and only reflect on the significant ones only. Eg pg 8 line 157..only 4% had no education may be deleted and try to maintain that.  Pg 8 line 156. Avoid just writing percentages to start sentences. Also again, in Page 9 line 159 and be consistent throughout the manuscript. Again, line 66 page 9  Also numbers less than 10 need to be spelt out as two and not number 2 as in pg 9 line 167 and be consistent throughout.</p> <p><b>Discussions</b>  Avoid self-citations eg pg15 line221. Our study... can be reported in the third person as This study... and maintain this consistently throughout the manuscript.  Pg 15 line 226-228. Ultrasound was not looked at as a variable in this study and therefore, despite its universal significance in Feto maternal medicine, this sentence could be taken as merely an assumption of a retrospective data. Even though its availability and access is a scarcity. This discussion point may need to be rewritten or rephrased.</p>
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	<p>Pg 15 line 229.Those above 28 weeks may have been saved if USS was available. The audience needs to know now if the NICU of Hospital can take 28 weeks baby. In other words, what is the survival rate of an extreme premature or IUGR in the NICU of this facility? Most LMIC would have at least 50% survival rate for 32 weeks GA babies.</p> <p>Pg 15 line 248.Consider-replacing word plausible with significance or similar.</p> <p>Conclusions Well written References: Reference syntax and spelling are consistent and adequate number.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer 1:

Dr. Sohinee Bhattacharya, University of Aberdeen

Comments to the Author:

This manuscript presents data on stillbirth rates in a tertiary referral hospital in the Solomon Islands. I have some suggestions for improving the manuscript:

In the abstract the participants should be all births occurring in the hospital (i.e. the denominator used to calculate the stillbirth rate)

Thank you for this comment. We have now amended the abstract to read: (line 40-42):

‘Participants: all births occurring in the hospital during the study period.’

‘Outcome measures: Number of, cases and risk factors for stillbirths (fetal deaths before birth at  $\geq$ 20 weeks estimated gestation or  $\geq$ 500g birthweight.)’

It would be good to present data on the sociodemographic characteristics on the general population if available. Similarly maternal and perinatal conditions identified as causes of stillbirth should also be compared ideally with population prevalence. This will make it a proper cohort study rather than simply an audit of perinatal deaths.

Thank you for this feedback. We agree, this data regarding the general population in the Solomon Islands would be beneficial. Population prevalence and sociodemographic data is very limited in the Solomon Islands. We were unable to collect data on the total population during the study period due to missing data on the vast majority of births. We have highlighted this as a limitation in our discussion. (Line 315-316)

‘Our study was limited by its retrospective nature and incomplete data on stillbirths, as well as incomplete data on the total number of births during the study period.’

Some data is regarding antenatal attendance is available. This has been included in the Discussion, which now reads:

'Recent WHO data suggests that most (65.4%) of women in the Solomon Islands have at least one antenatal visit.<sup>18</sup> This was also evident in our cohort, however we found significant gaps in the quality of care. It is well-known that many stillbirths in LMICs may be prevented through improved antenatal care.' (Lines 259-261)

Prevalence data on low birth weight, preterm birth and hypertensive disorders of pregnancy is completely lacking in the Solomon Islands. There is some prevalence data on anaemia in women of reproductive age and congenital syphilis – two important factors identified in this study. This prevalence data has now been included and discussed in the Discussion section:

'Prevalence data for low birth weight and preterm birth is completely lacking in the Solomon Islands. However, in our cohort, suspected growth restriction was common, and many stillbirths occurred at preterm gestations.' (Lines 264-266)

'Syphilis remains a major cause of stillbirth globally. <sup>2, 3, 23</sup>. There is limited evidence regarding population prevalence of syphilis, however a recent study in the Solomon Islands 1:210 liveborn babies had evidence of congenital syphilis.<sup>24</sup> Routine antenatal testing is, thus, recommended as part of antenatal care.<sup>25-27</sup> A deficiency in testing of syphilis was evident in our cohort, with 53% (10 babies) of the 19 antenatal stillbirths associated with infection showing overt signs of congenital syphilis infection, however only one third of women were tested. Similarly, maternal anaemia is a major risk factor for low birth weight and stillbirth. Anaemia was common in our study and lower than the most recent prevalence data, showing 49% of pregnant women are anaemic in the Solomon Islands.<sup>28</sup>' (Lines 277-283)

Reviewer 2:

Dr. John Bolnga, Modilon General Hospital, Papua New Guinea Institute of Medical Research  
Comments to the Author:

Stillbirth in the Solomon Islands – a hospital-based retrospective cohort study.

Reviewer

This is a great paper, well written and is so important in the Reproductive Health domain to gauge the audience insights into the difficulties of accurately categorizing stillbirths and the practical difficulties of care in the LMIC such as the Solomon. Congratulations to the study team and lead author of this paper.

Thank you for this positive feedback.

I have a few comments to make.

General Comment 1.:

The paper needs minor revision with the way figures/results are presented in the text. Eg. 79% were married or co-habiting...Begin sentences with words and not numbers or if possible rephrase them.

This has been done throughout the manuscript, eg:

'The majority (79%) were married or co-habiting...' (Line 178)

2. Furthermore, none significant results do not need to be reported in the texts as it is there in the table for readers to see and only elaborate on bigger values or of significance that you need to discuss.

This has been amended throughout the results section.

3. Avoid self-citations and report in the third person

This has been corrected throughout the manuscript.

Title

Your title may be too broad and could be improved. You investigated specifically the incidence and causes of stillbirth in the tertiary referral hospital in the Solomon Island, which is not reflective of the entire country stillbirth rate.

This has been amended, and the title now reads:

'The Incidence and causes of stillbirth in the only tertiary referral Hospital in the Solomon Islands – a hospital-based retrospective cohort study.' (Lines 1 and 2)

Introduction

Well presented with good paragraph connections, flow and further strengthened with appropriate references. Ends with aims of the current study introduced well.

Pg 5 line 88-90. This sentence may have to be introduced into the study setting of the methodology. Also, spell the word four (4) consultants and not just number. Just having two CTG in introduction, signals a bias outcome and therefore may have to be deleted.

Further information regarding the study setting has been included in the Materials and Methods section, as detailed below. The second comment has been incorporated, as follows:

'...only four consultant obstetricians.'

The mention of CTGs has been deleted (Line 89).

Methods

The study site background needs to be elaborated a bit more to give readers some perspective .eg, labour ward or delivery suite, type of specialists and annual delivery rate etc.

This has been included within the Materials and Methods, lines 129 – 133 now read:

'The National Referral Hospital is situated on the main island of Guadalcanal. It is supported by 9 other regional hospitals throughout the country. The obstetrics and gynaecology department services 70% of the hospitals admissions and the annual delivery rate is 5000-6000 births per year, however there are only 3 beds in the delivery suite. Four consultant obstetricians and gynaecologists are supported by 5-6 specialists in training, very limited midwifery staff, anaesthetic staff and laboratory staff.'

Pg 6 Line 120-124 Sentences repetition needs rephrasing.

This has been amended to read on line 143:

'Available case files were reviewed for suspected cause of death and contributing maternal conditions.'

## Results

Results satisfactorily presented. Table title, column heads and data categorised well for clarity.

Text results are appropriate as stated earlier, but insignificant data does not need to be repeated in text and only reflect on the significant ones only. Eg pg 8 line 157..only 4% had no education may be deleted and try to maintain that.

This has been deleted and the results section edited with this feedback.

Pg 8 line 156.Avoid just writing percentages to start sentences. Also again, in Page 9 line 159 and be consistent throughout the manuscript. Again, line 66 page 9. Also numbers less than 10 need to be spelt out as two and not number 2 as in pg 9 line 167 and be consistent throughout.

We thank the reviewer for highlighting these errors and have amended throughout.

## Discussions

Avoid self-citations eg pg15 line221.Our study... can be reported in the third person as This study... and maintain this consistently throughout the manuscript.

This has been corrected:

'This study is the first to investigate causes of stillbirth in the Solomon Islands.' (Line 255)

Pg 15 line 226-228.Ultrasound was not looked at as a variable in this study and therefore, despite its universal significance in Feto maternal medicine, this sentence could be taken as merely an assumption of a retrospective data. Even though its availability and access is a scarcity. This discussion point may need to be rewritten or rephrased.

Ultrasound was investigated within the study (as stated in the results section – Line 192-193):

'All but one mother received an ultrasound during her care, however only 25% received an ultrasound in the first or second trimester.'

We have now also included this in Table 1 for clarity. However, we have also amended the discussion to highlight the limitation of our retrospective data, (lines 261-270) to read:

'A key component of antenatal care is ultrasound assessment, however three quarters of women within our cohort did not receive an early ultrasound. This likely reflects the availability of antenatal ultrasound in the nation. Ultrasound imaging is vital for dating and diagnosis of anomalies and detection of suspected fetal growth restriction 19, 20. In our cohort, suspected fetal growth restriction was common (reported in 59% of stillbirths with a documented birthweight) and of these, 80% were estimated to be over 28 weeks gestations. Neonates born > 28 weeks' gestation are commonly admitted to the special care nursery in the Solomon Islands and have a survival rate of at least 40%, based on estimates from hospital records. Thus, many of these stillbirths could have been prevented if low birthweight had been detected earlier via ultrasound with adequately timed delivery of these

compromised fetuses. Whilst access to ultrasound examination is particularly challenging in this setting, expanding these services may assist in reducing stillbirths. 3, 21'

Pg 15 line 229. Those above 28 weeks may have been saved if USS was available. The audience needs to know now if the NICU of Hospital can take 28 weeks baby. In other words, what is the survival rate of an extreme premature or IUGR in the NICU of this facility? Most LMIC would have at least 50% survival rate for 32 weeks GA babies.

Thank you for this feedback. This has been clarified and further described, as below:

'Neonates born > 28 weeks' gestation are commonly admitted to the special care nursery in the Solomon Islands and have a survival rate of at least 40%, based on estimates from hospital records. Thus, many of these stillbirths could have been prevented if low birthweight had been detected earlier via ultrasound with adequately timed delivery of these compromised fetuses. Whilst access to ultrasound examination is particularly challenging in this setting, expanding these services would assist in reducing stillbirths. 3, 21' (Line 264-270)

Pg 15 line 248. Consider-replacing word plausible with significance or similar.

This has been amended, as below:

'The large number of missing case files and reliance on physical appearance to identify timing of stillbirths may have led to an underrepresentation of intrapartum deaths. This is certainly significant given most intrapartum stillbirths had suboptimal care. (Lines 306-308)

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Bolnga, John Modilon General Hospital, Obs and Gynae
<b>REVIEW RETURNED</b>	03-Dec-2022
<b>GENERAL COMMENTS</b>	The review comments have been appropriately rebutted and I am satisfied with the final outcome of the manuscript and recommend for it to be accepted for publication