

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	WHERE CHILDREN AND ADOLESCENTS DROWN IN QUEENSLAND: A POPULATION-BASED STUDY
AUTHORS	Wallis, Belinda; Watt, Kerrienne; Franklin, Richard; Nixon, James; Kimble, Roy

VERSION 1 - REVIEW

REVIEWER	Mosharaf Hossain Universiti Putra Malaysia Malaysia
REVIEW RETURNED	28-Jul-2015

GENERAL COMMENTS	The reviewer also provided a marked copy with additional comments. Please contact the publisher for full details.
-------------------------	---

REVIEWER	Dr Stephen Beerman University of British Columbia Faculty of Medicine Canada
REVIEW RETURNED	07-Aug-2015

GENERAL COMMENTS	<p>Thank you for this work. The data linkage is useful. The data on non-fatal drowning events is most useful. This excludes non-fatal drowning events that do not enter the data fields by not attending any medical care or attending in a private clinic.</p> <p>Introduction: In the title and in the methods you use the term "child and adolescent" in the introduction section you choose to use only "child". Consider consistency on this terminology.</p> <p>Methods: no improvement suggestions</p> <p>Results: table 1 - total drownings do not add up for pools (643 but if you add up public + private + unable to determine = 644) Total drownings sums to 1034 yet the text indicates 1179 non-fatal and 120 fatal = 1299 -- not clear to me why these #'s do not match?</p> <p>in the text and table on relative ratio - consider the 1-4 yr RR which is more meaningful than 0-4 yrs.</p> <p>Discussion: in the Pool section - the statement - "There is no room for complacency' seems incomplete or misplaced. adding to that sentence or add another sentence - about the target for prevention is needed to reduce this burden.</p> <p>In the coastal water section - comment about the "off shore' events may be helpful.</p> <p>Conclusion: no improvement suggestions</p>
-------------------------	---

REVIEWER	Shirin Wadhvaniya Johns Hopkins International Injury Research Unit, USA
REVIEW RETURNED	20-Aug-2015

GENERAL COMMENTS	<p>Introduction:</p> <ul style="list-style-type: none"> - Page 5 lines 21 – 23 – Please provide reference where rates of fatal and non-fatal drowning for Queensland are provided. <p>Methods:</p> <ul style="list-style-type: none"> - Page 9 lines 29-30 – Dam is a water reservoir not essentially for animal water storage. Please check. - Page 9 – I have some concerns with the classification that is provided for drowning locations as private and public. Dams are classified as private and these could be in a public restricted area. Also, all public unrestricted are either inland or costal water bodies. Since the analysis focuses only on public and private pools, how swimming pools were classified into these two categories could be focused on. <p>Results:</p> <ul style="list-style-type: none"> - Page 13 lines 9 – 16 – here the distance of drowning location as away or close to home is described. However, the methods section and the analysis do not present any data on distance of drowning location from home. - Page 13 lines 29 – 32 and Table 1 – the differences of drowning location by sex gets repeated in Table 3 and page 17 lines 42 - 51. - Table 1 – data is missing for about 210 cases of fatal/non-fatal drowning. It is not indicated either in the table or text why these cases were excluded from analysis. - 71% of pools were identified as public/public commercial/private, 67% events occurred in private and 29% in public pools. Not sure how these proportions were arrived at. When numbers from Table 1 are used these proportions are different. - Table 2 – If data on fatal and non-fatal drowning location by age is included in Table 1 the readers can get an idea of ranking there itself. - Table 3: The incidence rate by location, severity and related trends are presented in Table 4. Data on severity and trend from Table 3 can be included by adding another row for 0 – 19 years in Table 4. - Page 17 lines 24 – 38 discuss trend of non-fatal and fatal drowning by location. This could be combined with the sub-section on ‘trend over time’ on page 18. - Page 18 line 10 – Please edit the sentence with ‘pool rates’. I think you are referring to ‘drowning rates’ where pool is location. Also, the increase in drowning rates for all age groups are not significant and I am not sure one can say that it increased for all age groups except those below 1. - Page 21 line 23 – 27 – Here it is mentioned that female aged 1 and 5 – 19 years were more frequently involved in bath drowning but was this statistically significant? - Page 22 lines 16 – 18 – Compared to 5 – 19 year old, coastal drowning was reported to be less likely in 0 – 4 years old. However, is this result statistically significant? <p>Discussion:</p> <ul style="list-style-type: none"> - For drowning prevention strategies supervision by lifeguards can be suggested for costal drowning. - Page 26 line 23 – 25 – please check if 55% of drowning among 1 – 4 year old occurred in dams or is it 55% of all inland drowning?
-------------------------	--

	<p>- Strengths and limitations – “This is the first study on drowning to comprehensively utilize linked data...” Since the earlier publication by authors (also referenced in this manuscript) also used linked data this sentence needs to be rephrased?</p> <p>Other comments: - Please check manuscript for grammar, typos and formatting errors. E.g.: some reference sources are not found, on page 16 some text is covered by text box.</p>
--	--

VERSION 1 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1

Reviewer Name Mosharaf Hossain

Institution and Country Universiti Putra Malaysia
Malaysia

Please leave your comments for the authors below

Please check the statistical tools

We are uncertain what the reviewer is requesting in this comment. If the reviewer is referring to the statistical software that was used to complete these analyses, these are described in the Methods section (page 10, lines 39-52). Epilinfo was used to analyse trends over time. SPSS was used for all remaining analyses (Relative Risks and 95%CI , as well as descriptive analyses). If the reviewer is referring to statistical techniques used in the analyses, then these are also described on page 10 in the Methods section. We are confident that the appropriate techniques were used. Apart from incidence rates, Relative Risks and 95%CI, the majority of analyses presented in the manuscript were chi-square tests (as categorical variables were used), or Fisher’s Exact test when assumptions of the chi-square test were violated.

Reviewer: 2

Reviewer Name : Dr Stephen Beerman

Institution and Country: Univerisity of British Columbia

Please leave your comments for the authors below

Thank you for this work. The data linkage is useful. The data on non-fatal drowning events is most useful. This excludes non-fatal drowning events that do not enter the data fields by not attending any medical care or attending in a private clinic.

Response: Thank you for these comments.

Introduction: In the title and in the methods you use the term "child and adolescent" in the introduction section you choose to use only "child". Consider consistency on this terminology.

Response: The terms “child and adolescent” were used to describe the entire cohort 0-19yrs, however, in the interests of simplifying reading, “child” or “children” was used to cover all of this age range. We have added words to the Methods to make this explicit:

Text inserted P8 L16“...refer to this entire age group as children rather than “children and adolescents”.

Methods: no improvement suggestions

Results: table 1 - total drownings do not add up for pools (643 but if you add up public + private + unable to determine = 644) Total drownings sums to 1034 yet the text indicates 1179 non-fatal and 120 fatal = 1299 -- not clear to me why these #'s do not match?

Table 1 has been carefully checked and the totals add up correctly. There was an error in the footnote describing the number of cases that occurred in pools which were unable to be determined as public or private, which has now been rectified. The total number of cases for which drowning location could be identified is 1088 cases, and drowning locations were not able to be identified for 211 drowning events. This has been added to Table 1 and to Results text P12 L12.

in the text and table on relative ratio - consider the 1-4 yr RR which is more meaningful than 0-4 yrs. This is a thoughtful comment and Table 5 has been revised for Pool Drowning and Coastal drowning. These changes have also been reflected in Fig 3 for Pool drowning.

Discussion: in the Pool section - the statement - "There is no room for complacency" seems incomplete or misplaced. adding to that sentence or add another sentence - about the target for prevention is needed to reduce this burden.

Inserted text: "...indicate the potential for morbidity and further fatalities, and highlight that there is no room for complacency if this burden is to be reduced."

In the coastal water section - comment about the "off shore" events may be helpful.

We have identified in Results that offshore events are related to boating and the non-wearing of life-jacket and have made minor changes to highlight this.

Inserted text in Discussion: "Small watercraft incidents were common for offshore incidents resulting in fatality and show that children not wearing life jackets can and do drown."

Conclusion: no improvement suggestions
The authors thank you for your comments.

Reviewer: 3

Reviewer Name: Shirin Wadhvaniya

Institution and Country: Johns Hopkins International Injury Research Unit, USA

Please leave your comments for the authors below

Thank you for sharing the paper. The following suggestions are provided:

Introduction:

- Page 5 lines 21 – 23 – Please provide reference where rates of fatal and non-fatal drowning for Queensland are provided.

Reference 6 has been inserted.

Methods: - Page 9 lines 29-30 – Dam is a water reservoir not essentially for animal water storage. Please check.

P9 L30 "animal" deleted and "water storage reservoirs" inserted to avoid confusion. (All dams except two were farm dams which are principally used for watering stock.)

- Page 9 – I have some concerns with the classification that is provided for drowning locations as private and public. Dams are classified as private and these could be in a public restricted area. Also, all public unrestricted are either inland or coastal water bodies. Since the analysis focuses only on public and private pools, how swimming pools were classified into these two categories could be focused on.

This study used public or private classifications for all sites which was outlined in the Methods section. However, in this paper, we have only presented results relating to public and private ownership of

pools. We appreciate that this was confusing and thank the reviewer for pointing this out. Therefore, the relevant paragraph in the Methods section has been modified to make this explicit.

Results:- Page 13 lines 9 – 16 – here the distance of drowning location as away or close to home is described. However, the methods section and the analysis do not present any data on distance of drowning location from home.

This was intended to be a reference to pools and bathtubs being located within the home, rather than a location further away from the home. Actual distance from usual residence was not able to be calculated. It has been deleted to avoid confusion.

- Page 13 lines 29 – 32 and Table 1 – the differences of drowning location by sex gets repeated in Table 3 and page 17 lines 42 - 51.

Male : female ratio has been deleted from Table 1.

- Table 1 – data is missing for about 210 cases of fatal/non-fatal drowning. It is not indicated either in the table or text why these cases were excluded from analysis.

This omission in presenting the data for those sites where a location could not be identified (211) has been added to Table 1.

- 71% of pools were identified as public/public commercial/private, 67% events occurred in private and 29% in public pools. Not sure how these proportions were arrived at. When numbers from Table 1 are used these proportions are different.

The text has been corrected and additional numbers inserted to make these figures clearer thank you.

- Table 2 – If data on fatal and non-fatal drowning location by age is included in Table 1 the readers can get an idea of ranking there itself.

We feel that the purpose of Tables 1 and 2 are quite distinct and meaningfully different. Table 1 provides numbers (and %) of drowning events for each drowning location, by broad age groups (0-4; 5-9; 10-19), and some information on fatality vs non-fatality (via the fatality ratio for each drowning location). Table 2 provides detailed information on the top 3 drowning locations for more specific age-groups (<1; 1-4; 5-9; 10-14; 15-19 yrs), for fatal and non-fatal drowning events. We feel that this table adds important valuable age-specific drowning location information that usefully informs drowning prevention.

- Table 3: The incidence rate by location, severity and related trends are presented in Table 4. Data on severity and trend from Table 3 can be included by adding another row for 0 – 19 years in Table 4.

We have slightly modified Table 3 so that the unique information presented in Tables 3 and 4 is more explicit. Table 3 presents a breakdown of drowning location data for the whole cohort (0-19yrs), by severity (fatal, admitted, non-admitted). Rates for gender by drowning location (including RR), and trends over time, are also presented.

Table 4 presents data on drowning location by age groups, for non-fatal and total drowning events, with trends over time. We believe that combining these tables would create a complex and incomprehensible table, where we would potentially lose some of the detail that is currently presented.

- Page 17 lines 24 – 38 discuss trend of non-fatal and fatal drowning by location. This could be combined with the sub-section on 'trend over time' on page 18.

This paragraph is in the section titled “Overall drowning location incidence rates 0-19years”, and relates to trends over time in drowning location for the whole cohort (0-19yrs). The next section is called “Location by age group and severity” and there is a subheading “Trends over time” where trends over time in drowning location for specific age groups are presented. No subheadings are used in the first section, but the following section does have subheadings. We appreciate that the structure of this section is not clear and inconsistent, and have added in sub-headings to the first section to clarify, so both sections are consistent.

- Page 18 line 10 – Please edit the sentence with ‘pool rates’. I think you are referring to ‘drowning rates’ where pool is location. Also, the increase in drowning rates for all age groups are not significant and I am not sure one can say that it increased for all age groups except those below 1. Inserted text now reads: “Pool drowning rates increased over time in every age group except for those aged less than 12 months, however the increases were significant in 0-4yrs, 1-4yrs and 5-9yrs.”

- Page 21 line 23 – 27 – Here it is mentioned that female aged 1 and 5 – 19 years were more frequently involved in bath drowning but was this statistically significant?

This sentence was intended to illustrate that the incidence rates for females were higher than males for bath drowning rates in children aged 1yr and 5-19yrs. The text has been modified to make this explicit.

Text inserted: “The male to female ratio for bath drowning was the same for <1yr and 2-4yrs, but the bath drowning rate was 1.1 times higher for females than males aged 1yr old, and seven times higher for female 5-19yrs (compared with males) (Table 5).”

- Page 22 lines 16 – 18 – Compared to 5 – 19 year old, coastal drowning was reported to be less likely in 0 – 4 years old. However, is this result statistically significant?

As shown in Table 5 (RR with 95%CI that include 1), this was not significant. Further information about the RR and the 95%CI have been added to the text to make explicit that this was not significant. [note that the RR and 95%CIs in this table have been modified due to the request by another reviewer to change the age group from 0-4yrs to 1-4yrs]

Inserted text: “Risk of a coastal drowning event was 16% lower in younger children (1-4yrs) than older children 5-19yrs, but this was not significant (95%CI=0.52-1.35) (Table 5).”

Discussion:- For drowning prevention strategies supervision by lifeguards can be suggested for costal drowning.

Unfortunately it is not always recorded if coastal drowning events were at beaches patrolled by lifeguards, albeit a sound intervention. We know that deaths were not ‘between-the-flags’ as this information is recorded separately in Australia by Surf Life Saving Australia. To understand the criteria to be met when a beach is patrolled, as well as the hours and areas patrolled, was well outside the scope of this study.

We have added to Discussion: “Unfortunately, it is not always recorded if coastal drowning events were at beaches patrolled by lifeguards, albeit a sound drowning prevention intervention.”

- Page 26 line 23 – 25 – please check if 55% of drowning among 1 – 4 year old occurred in dams or is it 55% of all inland drowning?

The sentence now reads: In younger children 1-4yrs, more than half (55%) of drowning locations were dams with an overwhelming fatality ratio ...”

- Strengths and limitations – “This is the first study on drowning to comprehensively utilize linked

data...” Since the earlier publication by authors (also referenced in this manuscript) also used linked data this sentence needs to be rephrased?

This sentence has now been modified to clarify that this is the first time that comprehensive linked data have been used to examine drowning location.

Inserted text:

“This is the first study on drowning location to comprehensively utilise linked data across the continuum of care ...”

Other comments:- Please check manuscript for grammar, typos and formatting errors. E.g.: some reference sources are not found, on page 16 some text is covered by text box.

We apologise for the formatting and text box errors which occurred when converting to pdf. These have been rectified and an independent proof reader assisted us with corrections.

VERSION 2 – REVIEW

REVIEWER	Dr Stephen B Beerman University of British Columbia Canada
REVIEW RETURNED	18-Oct-2015

GENERAL COMMENTS	The reviewer completed the checklist but made no further comments.
-------------------------	--