

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

This paper was submitted to the Injury Prevention but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open where it was re-reviewed and accepted.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Risk factors for injury mortality in rural Tanzania: a secondary data analysis.
AUTHORS	Ae-Ngibise, Kenneth ; Masanja, Honorati; Kellerman, Ronel; Owusu-Agyei, Seth

VERSION 1 – REVIEW

REVIEWER	Bugeja, Lyndal Monash University, Injury Research Institute
REVIEW RETURNED	22-Mar-2012

GENERAL COMMENTS	<p>GENERAL</p> <p>Comment 1. This is an interesting paper that has valuable content to an international audience with an interest in injury mortality and methods of fatal injury surveillance in developing countries. The order of some of this content makes some of the messages unclear. The paper could be strengthened and reach a standard acceptable for publication if this is addressed. To assist the authors to address this, I have re-ordered the content of the paper and inserted other word changes. I hope the authors find these suggested amendments constructive and helpful.</p> <p>ABSTRACT</p> <p>Comment 2. Much of the content is fine. A few word changes have been made (see revised version below).</p> <p>Background: Injuries rank high among the leading causes of death and disability annually, injuring over 50 million and killing over 5 million people globally. Approximately 90% of these deaths occur in developing countries. Aim: To identify the risk factors for injury mortality in the Rufiji Health and Demographic Surveillance System (RHDS) in Tanzania. Methodology: Mortality data from Rufiji HDSS for the period 2002 to 2007 was examined. All persons aged one year and over were included in the analysis. Verbal Autopsy data was used to determine the cause of death in accordance with the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10). Trend and Poisson regression tests were used to examine the association between socio-demographic risk factors and injury mortality. Results: The overall crude injury mortality rate was 33.4 per 100,000 person years of observation. Injuries contributed to 4% of the total mortality burden. Males were three times more likely to die from injuries compared with females [Adjusted IRR=3.04, p=0.001, 95% CI (2.22-4.17)]. Persons aged 65 years and over were 2.8 times more likely to die from injuries compared to children under 15 years of age [Adjusted IRR=2.83, p=0.048, 95% CI (1.01- 7.93)]. The highest frequency of deaths resulted from Most injury deaths were due to road transport crashes</p>
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and other external causes. Conclusion: Injury is becoming an important cause of mortality in the Rufiji HDSS Area. Most injuries can be prevented by life saving interventions such as road safety education, regular road maintenance and use of life jackets for fishermen and recreational swimmers.

Key words: Injury, mortality, burden, risk factor, Cause-specific

INTRODUCTION

Comment 3. The first two sentences are known by the target audience and are not needed. There is other content in the first paragraph that is much stronger and makes some interesting points. Suggested refinement and re-order of content is shown below.

Comment 4. The word "disabilities" is spelt incorrectly.

Comment 5. The referencing is not in accordance with the authorship guidelines. The number comes after the full stop and should not be in brackets. Check the authorship guidelines and / or look at a recently published paper for guidance.

Comment 6. The two sentences comparing injury to chronic disease (see below) is interesting, however it was difficult to follow. If the authors wish to include this in the introductory paragraph to the paper, it needs to be more clearly articulated.

"Injury remains a very important, but neglected cause of non communicable diseases (NCD) in the world. Although non-communicable diseases were responsible for nearly 60% of deaths globally in 2001 compared with 9% due to injury mortality, the Years of Life Lost (YLL) proportional to injuries is much higher, at 12%, compared with 40% for chronic diseases,(4)."

Comment 7. What is missing from this introduction is a paragraph on the death reporting and registration process in Tanzania. For instance, is there any medico-legal death investigation process or other formal registration or certification of death required by law. Who and how is the cause of the death determined and how is it recorded? The reader needs to understand this as it has implications for the method. For example, see below for how this process operates in Victoria, Australia:

"In Australia, death investigation is administered under a death registration process that involves treating medical practitioners issuing death certificates, supported by a coroner's system which comes into play in special circumstances of death. The coroner's investigation is a true medico-legal process led by legally trained practitioners assisted by medically trained practitioners. There are approximately 35,000 deaths in the State of Victoria per year, the majority of which are registered following the issue of a death certificate by the treating medical practitioner. Approximately 4,500 of these are reported to the State Coroner's Office for investigation. Of these deaths, approximately 1,500 are found, following post-mortem procedures, to result from natural causes. Investigation into these deaths is often limited. In contrast, deaths resulting from external causes often receive more extensive investigation. Such deaths include deaths from unintentional injury (eg motor vehicle collisions, falls, poisonings and drowning), intentional self-harm and interpersonal violence."

RE-ORDERED INTRODUCTION

Injury mortality is a major global public health problem, accounting for 9% of mortality and 16% of all disabilities annually.³ In low and middle-income countries, injuries are growing in significance because of the demographic and socioeconomic transitions that have characterized their development in recent decades.² Of an estimated

5.4 million people worldwide who died from injuries in 2005, over 90% occurring in low and middle-income countries.⁶

In many developing countries, injuries have a significant impact on the health of populations and are rapidly becoming increasingly recognised as a major cause of death and disability. Eight of the 15 leading causes of death for people aged 15 to 29 years were injury-related including both intentional and unintentional deaths.^{8;9} For every death that results from injury, dozens of hospitalizations, hundreds of emergency department visits and thousands of doctors' appointments occur. It is projected that by 2020, injuries will compete with infectious diseases as a major source of mortality and morbidity in the developing world.⁷

Modernisation has reportedly been associated with increased mortality from injury. A study in Tanzania reported that as populations grow and become more mobile, a large proportion of adults are at higher risk for injuries than in the past. Similarly, a 2002 survey of 7,035 rural and 8,188 urban households in Tanzania found that 22.5% and 4.3% persons reported injuries respectively. Although the overall incidence was higher in the rural area, the incidence of major injuries (> or = 30 disability days) was similar in both areas.^{10; 11} Males were mainly affected in a total of 342 burned children in Northwestern Tanzania and children aged two years and under were the majority, accounting for 45.9% of cases.¹²

The descriptive epidemiology of injury mortality in Africa and other low-income countries is poorly understood. As a result, accurate data on the vital statistics about injury mortality is not well documented.¹¹ To address this gap in knowledge, this study examined the distribution of injury deaths, gender- and age-specific trends and other risk factors associated with injury mortality in rural Tanzania.

METHOD

Comment 8. Need to set out the method as follows: Study design and setting; Data source; Variables and definitions; Case identification; Data collection; Data analysis; Ethics.

Comment 9. Some of the content is included under the incorrect sub-heading. See below for suggested re-ordering of method.

Comment 10. The word "accident / accidental" should be replaced with unintentional.

Comment 11. More information is needed to explain the case identification. Who identified the deaths, explain whether the data was extracted as a unit record and what if any data cleaning was needed.

Comment 12. Also need some information on how the data was collected and prepared for analysis following extraction from the surveillance system.

Comment 13. When you say "diagnosis" do you mean "cause of death"?

Comment 14. As stated in comments made on the Introduction, some explanation of how and who determinations cause of death and an explanation of what a verbal autopsy comprises.

RE-ORDERED METHOD

Study design and setting

The research design comprised a cross-sectional study of injury mortality amongst the population of residents in the Demographic Surveillance area of the RHDSS between 2002 and 2007.

The study was conducted in the Rufiji Health and Demographic Surveillance System (RHDSS) area, one of the Demographic Surveillance Centres in Tanzania. The INDEPTH Network's monograph on mortality defines a demographic surveillance system (DSS) as a set of field and computing operations to handle the longitudinal follow-up of well-defined entities or primary subjects (individuals, households, and residential units) and all related demographic and health outcomes within a clearly circumscribed geographic area.

The RHDSS area extends from 7.470 to 8.030 south latitude and 38.620 to 39.170 east longitude. The area is located in the Rufiji district, about 178 kilometres south of Dar es Salaam. The RHDSS operates in 6 contiguous wards and 31 villages (about 60 km long x 30 km wide) and covers an area of 1813 sq km. The total population under demographic surveillance is about 85,000. Females (52%) outnumber males (48%) in the Rufiji DSA. The average household size is about 4-8 persons.

According to The United Republic of Tanzania's 2002 Population and Housing Census General Report, the population of Rufiji district was approximately 203,102 (98,398 males and 104,704 females) with an annual growth rate of 2.3%.¹³ The mean household size for the whole district was approximately five persons.¹³ The district is largely rural, though the population is clustered around Utete (District headquarters), Ikwiriri, Kibiti and Bungu townships. All the last three townships are within the HDSS area. Islam is the dominant religion, followed by Christianity and then African traditional believers. Kiswahili is the main language spoken by the inhabitants.

Data source

The Rufiji Health and Demographic Surveillance System's (RDHSS) cause-specific mortality data was the primary data source for this study. The RHDSS prospectively records longitudinal data on household demographics and is updated every four months. The HDSS was established to provide sentinel data through continuous surveillance of households and members within households in cycles with the aim of gathering information on health and demographic data to inform health policy and planning and to evaluate/monitor the impact of health reforms.

Variables and definitions

Injury mortality was the outcome variable of interest. It included all deaths resulting from injuries, whether unintentional or intentional in the Rufiji surveillance area between 2002 and 2007. The causes of deaths in the DSA had already been determined by the physicians using the verbal autopsy data.^{14;15} Verbal Autopsy (VA) interviews were performed on all deaths occurring in the study area using a standardized questionnaire to determine the probable cause of death which was based on ICD-10.^{16; 17} The cause of death was usually based on both remote and immediate factors leading to death.

A death outcome was classified as injury death when it occurred due to any one or combination of the following: animal bites; drowning; falls; firearm; fire / burns; road transport crash; homicide; and suicide (poison, hanging). The outcome variable was classified as positive for all injury mortality and negative for individual alive in a particular year. The total person years observed was the summation of all the individual time at risk of injury mortality from 2002 to 2007.

Case identification

Injury mortality data from was from the database for the analysis.

Data collection

Data was extracted from the Rufiji Health and Demographic Surveillance System (HDSS) for the period 2002 to 2007.

Data analysis

Principal Component Analysis (PCA) was used to construct a socio-economic index for each household.^{18;19} Households were categorized into high, medium and low socio-economic status based on the average number of household assets owned by the study participants as well as the environmental and household characteristics. Some of the assets included in the construction of the PCA were ownership of goats, cattle, sheep, houses, cars, chicken and televisions. The person years of observation (PYO) was computed for all study participants from the individual member information table and the migration table. This takes into consideration the movements of participants, the event file which records all the event history that have happened to individual members, and the interval file which is the start and end date of the study from which the person time of contribution is generated.

Bivariate and multivariate Poisson regression analysis was performed using STATA 10 to assess the association between the risk factors and injury mortality. Chi-squared test for trend was used to examine trends and patterns in injury mortality. All tests for significant associations were based on p-values at 5% significance level.

The descriptive statistical analysis comprised an examination of trends and patterns in injury mortality by age, gender, socio-economic status, and the identification of other risk factors associated with injury mortality. The analytic component involved the measurement of the association between age, gender, socio-economic, education, occupation, marital status (for individuals aged 15 years only) and injury mortality. Poisson regression analysis was used because it takes into account each participant's contribution of time throughout the entire study duration.

Ethics

Anonymity and confidentiality was ensured by replacing any potential personal identification of the study participants with unique reference codes. Ethical approval was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand. Ethics clearance was also obtained from the Ifakara Health Institute-Institutional Review Board for the primary study data collection.

RESULTS

Comment 15. Paragraph 1 - Replace "over the six year period" with "over the study period".

Comment 16. Paragraph 1 - The sentence "The total person years observed was the summation of all the individual time at risk of injury mortality from 2002 to 2007" belongs in the method.

Comment 17. Paragraph 1 - Replace "significant number of the study participants" with "over a third".

Comment 18. Paragraph 1 - Replace "belonged to the" with "were classified as".

Comment 19. Paragraph 1 - Last sentence beginning "A total of 4,471 ..." belongs in the next section.

Comment 20. Paragraph 1 - Replace the word "versus" with "compared to" and add the word "female" after the (29%).

Comment 21. Table I should be Table 1 and formatted in accordance with the authorship guidelines.

Comment 22. Paragraph 2 - Move the last sentence "Injuries contributed to 4% of the mortality burden" to be the first sentence as that is the subject of interest in this paper.

	<p>Comment 23. Paragraph 2 – “other”, should it be “other external causes”?</p> <p>Comment 24. Paragraph 3 – You have already reported a mortality rate of 4% and it does not need to be repeated.</p> <p>Comment 24. Paragraph 3 – I don’t think homicide and suicide should be reported together as one figure.</p> <p>DISCUSSION</p> <p>Comment 25. Paragraph 1 – In the second last sentence you say “... perform the risky jobs like fishing, manual farming and road traffic related injuries”. Do you mean driving for the purposes of work? If so, this needs to be clarified.</p> <p>Comment 26. Paragraph 5 – In the second sentence you make reference to the “bad road network”, what evidence is there that road infrastructure is poor and a contributory factor to road transport deaths. If this evidence is anecdotal, a description of the characteristics that increase the risk of such crashes would be useful. Later in this paragraph use introduce the term RTA, which I think is the first time you use it. Be consistent throughout that paper in your use of the term.</p> <p>Comment 27. Paragraph 6 – In the last sentence you refer to cooking as a possible explanation for the high frequency of burns amongst females. Did you have data on activity undertaken at the time the fatal injury occurred to substantiate this, or are just postulating?</p> <p>Comment 28. Paragraph 7 – There is some evidence that laws requiring the carriage of safety equipment on water vessels reduces the risk of drowning. To strengthen your conclusion, this body of literature should be referenced. In particular, life jackets are a promising drowning prevention intervention that provides an opportunity for a rescue to occur.</p> <p>Comment 29. It would be interesting to have some commentary on suicide as the lowest rate of external cause death in this community. In many Western countries, suicide is commonly the leading cause and readers may be interested in your explanation for this finding.</p> <p>Comment 30. A section on the strengths and limitations of this study is needed. Of particular interest is any limitations you identified in the classification of cause of death as the assignment of ICD-10 coding can be quite complex, particularly for poisoning.</p> <p>Comment 31. Figure 1 should be formatted in the same way as Figure 2.</p> <p>Comment 32. Figure 2 - replace "suicidal injuries" with "suicide", replace "accidental" with "unintentional", replace "homicidal injuries" with "homicide" or "assault", does "external causes" mean "other external causes". Replace "percentage" with "percent" on the x axis.</p>
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REVIEWER	Dandona, Rakhi Public Health Foundation of India
REVIEW RETURNED	27-Mar-2012

GENERAL COMMENTS	This paper describes trends in injury mortality from mortality surveillance system for the studied population. More data on cause-
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specific injury mortality would be useful addition. Considerable repetition of the findings in text could be avoided. Detailed comments follow.

Introduction

1. Page 3, paragraph 1 – Please shorten this paragraph considerably as these generic details regarding injuries are well established/known.

2. Page 3, paragraph 2 – Please provide Africa-specific data in this paragraph as context for the readers.

3. Page 4 – Please provide reference for the demographic surveillance system area.

Methodology

4. Page 5, lines 3-12 – Description of Rufiji district can be shortened.

5. General comment – There is a significant repetition in text of the results presented in tables and figures. Please summarize/highlight the findings from tables and results and not describe everything presented in the tables/figures.

6. Data on household socioeconomic status (SES) was missing for 55% of the population. This variable should not be included for analysis as inference based on such data can be erroneous.

7. Data on occupation are also missing for 20% of the population. Since occupation was found to be significantly associated with injury mortality in this paper, please present data showing for whom the occupation is missing, and if that can have any impact on the results.

8. Figures 3 and 4 - Possible reasons (including methodology, implementation or intervention) should be highlighted for the drop in injury mortality between 2005 and 2007. Is the decreasing trend continuing?

9. Page 11, lines 21-24 – Perhaps, a figure showing details of cause-specific mortality by gender would be useful.

10. Figure 5 – Crude death rates by age groups do not add much to the analysis as the higher burden of mortality in older age group is clearly documented in Tables 2 and 3. Please delete.

11. Cause-specific mortality by age group would be very useful, in particular because 65+ age group had the highest injury mortality from 2002 to 2007.

12. Figure 6 should be deleted (please see point 6 above).

13. Trend over years can be presented for cause-specific injury mortality. This can help with planning of interventions based on increase/decrease over time for certain causes.

Discussion

14. General comments

a. At various places, data from this study are referred to (or

	<p>presented) in this section but these are not presented in results. For example – cause-specific injury mortality by age and gender. The need for such data to be presented is suggested in a few of the points above in this review.</p> <p>b. This section is mainly repetition of results with comparison with other reported data. Intervention needs in this population are referred to (page 16) but data are not presented in a manner that can fully justify these intervention needs.</p> <p>15. Possible limitations of verbal autopsy data should be mentioned. Within the social context of the studied population, are there reasons for some causes to be under-reported, in particular the intentional injuries?</p>
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- The manuscript received another three more reviews at the Injury Prevention but the reviewers did not give permission for their comments to be published

VERSION 1 – AUTHOR RESPONSE

<p>Reviewer: 1 Comments to the Author GENERAL Comment 1. This is an interesting paper that has valuable content to an international audience with an interest in injury mortality and methods of fatal injury surveillance in developing countries. The order of some of this content makes some of the messages unclear. The paper could be strengthened and reach a standard acceptable for publication if this is addressed. To assist the authors to address this, I have re-ordered the content of the paper and inserted other word changes. I hope the authors find these suggested amendments constructive and helpful.</p>	
<p>ABSTRACT</p> <p>Comment 2. Much of the content is fine. A few word changes have been made (see revised version below).</p> <p>Background: Injuries rank high among the leading causes of death and disability annually, injuring over 50 million and killing over 5 million people globally. Approximately 90% of these deaths occur in developing countries. Aim: To identify the risk factors for injury mortality in the Rufiji Health and Demographic Surveillance System (RHDSS) in Tanzania. Methodology: Mortality data from Rufiji HDSS for the period 2002 to 2007 was examined. All persons aged one year and over were included in the analysis. Verbal Autopsy data was used to determine the cause of death in accordance with the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10). Trend and Poisson regression tests were used to examine the association between socio-demographic risk factors and injury mortality. Results: The overall crude injury mortality rate was 33.4 per 100,000 person years of observation. Injuries contributed to 4% of the total mortality burden. Males were three times more likely to die from injuries compared with females [Adjusted IRR=3.04, p=0.001, 95% CI (2.22-4.17)]. Persons aged 65 years and over were 2.8 times more likely to die from injuries compared to children under 15 years of age [Adjusted IRR=2.83, p=0.048, 95% CI (1.01- 7.93)]. The highest frequency of deaths resulted from Most injury deaths were due to road transport crashes and other external causes. Conclusion: Injury is becoming an important cause of mortality in the Rufiji HDSS Area. Most injuries can be prevented by life saving interventions such as road safety education, regular road maintenance and use of life jackets for fishermen and recreational swimmers.</p>	<p>Re-ordered accepted in good faith.</p> <p>I have accepted the minor changes in the abstract</p>

Key words: Injury, mortality, burden, risk factor, Cause-specific	
INTRODUCTION Comment 3. The first two sentences are known by the target audience and are not needed. There is other content in the first paragraph that is much stronger and makes some interesting points. Suggested refinement and re-order of content is shown below.	
Comment 4. The word “disabilities” is spelt incorrectly.	Accepted
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In many developing countries, injuries have a significant impact on the health of populations and are rapidly becoming increasingly recognised as a major cause of death and disability. Eight of the 15 leading causes of death for people aged 15 to 29 years were injury-related including both intentional and unintentional deaths.^{8;9} For every death that results from injury, dozens of hospitalizations, hundreds of emergency department visits and thousands of doctors’ appointments occur. It is projected that by 2020, injuries will compete with infectious diseases as a major source of mortality and morbidity in the developing world.⁷

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We have accepted the re-ordering of the Introduction in pages 1 and 2

other risk factors associated with injury mortality in rural Tanzania.	
METHOD Comment 8. Need to set out the method as follows: Study design and setting; Data source; Variables and definitions; Case identification; Data collection; Data analysis; Ethics.	Suggestion accepted in the current manuscript
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Comment 14. As stated in comments made on the Introduction, some explanation of how and who determinations cause of death and an explanation of what a verbal autopsy comprises. RE-ORDERED METHOD Study design and setting The research design comprised a cross-sectional study of injury mortality amongst the population of residents in the Demographic Surveillance area of the RHDSS between 2002 and 2007. The study was conducted in the Rufiji Health and Demographic Surveillance System (RHDSS) area, one of the Demographic Surveillance Centres in Tanzania. The INDEPTH Network’s monograph on mortality defines a demographic surveillance system (DSS) as a set of field and computing operations to handle the longitudinal follow-up of well-defined entities or primary subjects (individuals, households, and residential units) and all related demographic and health outcomes within a clearly	Re-ordering of the method section accepted in current manuscript

circumscribed geographic area.

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Data source

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transport crash; homicide; and suicide (poison, hanging). The outcome variable was classified as positive for all injury mortality and negative for individual alive in a particular year. The total person years observed was the summation of all the individual time at risk of injury mortality from 2002 to 2007.

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Injury mortality data from was from the database for the analysis.

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Data was extracted from the Rufiji Health and Demographic Surveillance System (HDSS) for the period 2002 to 2007.

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Bivariate and multivariate Poisson regression analysis was performed using STATA 10 to assess the association between the risk factors and injury mortality. Chi-squared test for trend was used to examine trends and patterns in injury mortality. All tests for significant associations were based on p-values at 5% significance level.

The descriptive statistical analysis comprised an examination of trends and patterns in injury mortality by age, gender, socio-economic status, and the identification of other risk factors associated with injury mortality. The analytic component involved the measurement of the association between age, gender, socio-economic, education, occupation, marital status (for individuals aged 15 years only) and injury mortality. Poisson regression analysis was used because it takes into account each participant's contribution of time throughout the entire study duration.

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<p>Anonymity and confidentiality was ensured by replacing any potential personal identification of the study participants with unique reference codes. Ethical approval was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand. Ethics clearance was also obtained from the Ifakara Health Institute-Institutional Review Board for the primary study data collection.</p>	
<p>RESULTS</p> <p>Comment 15. Paragraph 1 - Replace “over the six year period” with “over the study period”.</p>	<p>Suggestion accepted in good faith</p>
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<p>Comment 20. Paragraph 1 – Replace the word “versus” with “compared to” and add the word “female” after the (29%).</p>	<p>Done</p>
<p>Comment 21. Table I should be Table 1 and formatted in accordance with the authorship guidelines.</p>	<p>Done</p>
<p>Comment 22. Paragraph 2 – Move the last sentence “Injuries contributed to 4% of the mortality burden” to be the first sentence as that is the subject of interest in this paper.</p>	<p>Done</p>
<p>Comment 23. Paragraph 2 – “other”, should it be “other external causes”?</p>	<p>Done</p>
<p>Comment 24. Paragraph 3 – You have already reported a mortality rate of 4% and it does not need to be repeated. Comment 24. Paragraph 3 – I don’t think homicide and suicide should be reported together as one figure.</p>	<p>Accepted These are not reported separately</p>

<p>DISCUSSION</p> <p>Comment 25. Paragraph 1 – In the second last sentence you say “... perform the risky jobs like fishing, manual farming and road traffic related injuries”. Do you mean driving for the purposes of work? If so, this needs to be clarified.</p>	<p>Yes. I have revised the sentence to read “The high male injury fatality rate in this rural setting might be explained by the gender specific roles where men are more likely to perform the risky jobs like fishing, manual farming and road traffic related activities like driving”</p>
<p>Comment 26. Paragraph 5 – In the second sentence you make reference to the “bad road network”, what evidence is there that road infrastructure is poor and a contributory factor to road transport deaths. If this evidence is anecdotal, a description of the characteristics that increase the risk of such crashes would be useful. Later in this paragraph use introduce the term RTA, which I think is the first time you use it. Be consistent throughout that paper in your use of the term.</p>	<p>There was no anecdotal evidence to support this.</p>
<p>Comment 27. Paragraph 6 – In the last sentence you refer to cooking as a possible explanation for the high frequency of burns amongst females. Did you have data on activity undertaken at the time the fatal injury occurred to substantiate this, or are just postulating?</p>	<p>Here we were just postulating since women do most of the cooking in this part of the world</p>
<p>Comment 28. Paragraph 7 – There is some evidence that laws requiring the carriage of safety equipment on water vessels reduces the risk of drowning. To strengthen your conclusion, this body of literature should be referenced. In particular, life jackets are a promising drowning prevention intervention that provides an opportunity for a rescue to occur.</p>	<p>We have included evidence of life jackets as a safety measure of preventing drowning</p>
<p>Comment 29. It would be interesting to have some commentary on suicide as the lowest rate of external cause death in this community. In many Western countries, suicide is commonly the leading cause and readers may be interested in your explanation for this finding.</p>	<p>We have included a commentary on suicide as the lowest rate of external cause death page17 and 18</p>
<p>Comment 30. A section on the strengths and limitations of this study is needed. Of particular interest is any limitations you identified in the classification of cause of death as the assignment of ICD-10 coding can be quite complex, particularly for poisoning.</p>	<p>We now have a section on the strengths and limitations of the study in pages 19 and 20</p>
<p>Comment 31. Figure 1 should be formatted in the same way as Figure 2.</p>	<p>This is done in the current manuscript</p>
<p>Comment 32. Figure 2 - replace "suicidal injuries" with "suicide", replace "accidental" with "unintentional", replace "homicidal injuries" with "homicide" or "assault", does "external causes" mean "other external causes". Replace "percentage" with "percent"</p>	<p>This is done in the current manuscript</p>

on the x axis.	
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<p>Reviewer: 2</p> <p>Comments to the Author</p> <p>This paper describes trends in injury mortality from mortality surveillance system for the studied population. More data on cause-specific injury mortality would be useful addition. Considerable repetition of the findings in text could be avoided. Detailed comments follow.</p>	
<p>Introduction</p> <p>1. Page 3, paragraph 1 – Please shorten this paragraph considerably as these generic details regarding injuries are well established/known.</p> <p>2. Page 3, paragraph 2 – Please provide Africa-specific data in this paragraph as context for the readers.</p> <p>3. Page 4 – Please provide reference for the demographic surveillance system area.</p>	<p>1. The paragraph has been rephrased in page 2</p> <p>2. This is also done in page 2 and 3</p> <p>3. Reference has been provided</p>
<p>Methodology</p> <p>4. Page 5, lines 3-12 – Description of Rufiji district can be shortened.</p>	<p>4. We have shorten the description of the Rufiji area</p>
<p>Results</p> <p>5. General comment – There is a significant repetition in text of the results presented in tables and figures. Please summarize/highlight the findings from tables and results and not describe everything presented in the tables/figures.</p> <p>6. Data on household socioeconomic status (SES) was missing for 55% of the population. This variable should not be included for analysis as inference based on such data can be erroneous.</p> <p>7. Data on occupation are also missing for 20% of the population. Since occupation was found to be significantly associated with injury mortality in this paper, please</p>	<p>5. We have removed the paragraphs and sentences that were deemed repetitive</p> <p>6. This is true but we discussed this in the limitation section</p> <p>7. We</p> <p>8. We need data for 2008 and 2009 to assess</p>

<p>present data showing for whom the occupation is missing, and if that can have any impact on the results.</p> <p>8. Figures 3 and 4 - Possible reasons (including methodology, implementation or intervention) should be highlighted for the drop in injury mortality between 2005 and 2007. Is the decreasing trend continuing?</p> <p>9. Page 11, lines 21-24 – Perhaps, a figure showing details of cause-specific mortality by gender would be useful.</p> <p>10. Figure 5 – Crude death rates by age groups do not add much to the analysis as the higher burden of mortality in older age group is clearly documented in Tables 2 and 3. Please delete.</p> <p>11. Cause-specific mortality by age group would be very useful, in particular because 65+ age group had the highest injury mortality from 2002 to 2007.</p> <p>12. Figure 6 should be deleted (please see point 6 above).</p> <p>13. Trend over years can be presented for cause-specific injury mortality. This can help with planning of interventions based on increase/decrease over time for certain causes. Discussion</p>	<p>whether the decrease is continuing but which were not readily available.</p> <p>9. We initially included this but were advised to delete it but if it is so crucial we can easily include it again.</p> <p>10. We have deleted this figure</p> <p>11. We have described it briefly in the text but in a figure presentation</p> <p>12. We have deleted figure 6</p> <p>13. We did this but the number of figures was more than the required number specified by the journal. We excluded it.</p>
<p>14. General comments</p> <p>a. At various places, data from this study are referred to (or presented) in this section but these are not presented in results. For example – cause-specific injury mortality by age and gender. The need for such data to be presented is suggested in a few of the points above in this review.</p> <p>b. This section is mainly repetition of results with comparison with other reported data. Intervention needs in this population are referred to (page 16) but data are not presented in a manner that can fully justify these intervention needs.</p>	<p>14.</p> <p>A. We agreed fully with this view</p> <p>B. We have eliminated all the text that were repetitive in this manuscript and the results adequately presented and discussed</p>
<p>15. Possible limitations of verbal autopsy data should be mentioned. Within the social context of the studied population, are there reasons for some causes to be under-reported, in particular the intentional injuries?</p>	<p>15. the limitation of the verbal autopsy data have been discussed in the discussion section</p>

VERSION 2 – REVIEW

REVIEWER	Wilson Odero MD, PhD Professor of Public Health Maseno University, Kenya
REVIEW RETURNED	29-Aug-2012

THE STUDY	There is need for a brief description of the DSS database and the specific ICD-10 codes used in extraction of injury mortality data.
RESULTS & CONCLUSIONS	Conclusions do not accurately reflect the data generated and analysed.
GENERAL COMMENTS	<p>This revised paper has addressed most of the comments made previously. It is now focused on estimating risk factors for injury deaths in Rufiji district based on data extracted from the DSS database. However, there are still a few of outstanding issues that need to be clarified.</p> <p>1. Abstract - The stated conclusions should relate to the objective of the study, i.e., risk factors of injury mortality.</p> <p>2. Introduction - p 4, last paragraph (line 33-37), implies that the study was motivated by poor documentation and lack of accurate of data on injury mortality in Africa. This statement should be deleted since the study did not examine the quality/accuracy of injury mortality data captured in the RHDSS.</p> <p>3. Methods - A brief description of the purpose and structure of RHDSS including the variables contained in the database is needed, this will help in evaluating whether the database is populated with sufficient variables for</p>

	<p>estimating risk factors for injury deaths; cite appropriate reference(s).</p> <ul style="list-style-type: none"> - It is still not clear whether RHDSS cause of death diagnoses are ICD-10 coded, and whether the codes were used to extract cause-specific mortality. <p>Note that refs #17-18 do not support the statement that causes of injury deaths as determined by verbal autopsy are consistent with ICD-10 codes.</p> <p>4. Results</p> <ul style="list-style-type: none"> - p8, 2nd paragraph (line 37-39) – the sentence on exposure variables is incomplete and not supported by the data presented. - Other than demographics, what were the other important exposure factor(s) for injury mortality? - p.14, last paragraph, surprisingly suggests that the identified risk factors were for development of active convulsive epilepsy, yet epilepsy was not the outcome variable for this study (see p.6, on variables and definitions); delete. <p>5. Discussion</p> <ul style="list-style-type: none"> - p.15, 2nd paragraph, last sentence (line 47) is a recommendation; delete/ incorporate in the recommendations on p.19. - p.17, line 51-52 – the cited studies are specific to injuries from interpersonal violence (#33, 41) are not appropriate, and not deaths from all injuries. - Conclusions should highlight the key risk factors and trend of injury deaths. <p>Note that the recommended road safety education as an intervention to reduce road deaths is not based on the risk factors identified from the study.</p> <ul style="list-style-type: none"> - Based on the stated limitations, the main take home message should be that the existing RHDSS does not contain sufficient data that can be used to provide an accurate estimate of risk factors for cause-specific injury deaths
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VERSION 2 – AUTHOR RESPONSE

<p>Reviewer: Wilson Odera MD, PhD Professor of Public Health Maseno University, Kenya</p>	
<p>1. Abstract</p> <ul style="list-style-type: none"> - The stated conclusions should relate to the objective of the study, i.e., risk factors of injury mortality. 	<p>The conclusion is now revised as <i>“Injury is becoming an important cause of mortality in the Rufiji district. Injury mortality varied by age and gender in this area. Most injuries are preventable, policy makers need to institute measures to address the issue</i></p>
<p>2. Introduction</p> <ul style="list-style-type: none"> - p 4, last paragraph (line 33-37), implies that the study 	<p>This is now revised in a separate paragraph which reads <i>“To add to knowledge on injury mortality in</i></p>

was motivated by poor documentation and lack of accurate of data on injury mortality in Africa. This statement should be deleted since the study did not examine the quality/accuracy of injury mortality data captured in the RHDSS.	<i>the Africa, this study examined the distribution of injury deaths, gender- and age-specific trends and other risk factors associated with injury mortality in rural Tanzania”.</i>
3. Methods - A brief description of the purpose and structure of RHDSS including the variables contained in the database is needed, this will help in evaluating whether the database is populated with sufficient variables for estimating risk factors for injury deaths; cite appropriate reference(s).	The variables contained in the RHDSS injury mortality database includes basic demographic information such as date of birth, personal identification number, gender, occupation, marital status, socio-economic status, migration, injury specific cause of death, date of death, place of death and year of death.
- It is still not clear whether RHDSS cause of death diagnoses are ICD-10 coded, and whether the codes were used to extract cause-specific mortality.	The RHDSS cause of death diagnoses are ICD-10 coded, and these codes were used to extract the cause-specific mortality data.
Note that refs #17-18 do not support the statement that causes of injury deaths as determined by verbal autopsy are consistent with ICD-10 codes.	The sentence is restated “ <i>The causes of deaths in the DSA had already been determined by the physicians using the verbal autopsy data, in line with the International Classification of Diseases ICD-10,(15-16). Using the verbal autopsy data to diagnose cause of death have been validated, (17-18).</i> ”
4. Results - p8, 2nd paragraph (line 37-39) – the sentence on exposure variables is incomplete and not supported by the data presented.	This sentence have now been stated appropriately in the main document
- Other than demographics, what were the other important exposure factor(s) for injury mortality?	We didn’t have other important exposure factors available for the analysis which was a limitation of the study
- p.14, last paragraph, surprisingly suggests that the identified risk factors were for development of active convulsive epilepsy, yet epilepsy was not the outcome variable for this study (see p.6, on variables and definitions); delete.	This was a mistake but have now been corrected to read risk factors for injury mortality
5. Discussion - p.15, 2nd paragraph, last sentence (line 47) is a recommendation; delete/ incorporate in the recommendations on p.19. - p.17, line 51-52 – the cited studies are specific to injuries from interpersonal violence (#33, 41) are not appropriate, and not deaths from all injuries.	This is done. This is restated to capture only interpersonal violence
- Conclusions should highlight the key risk factors and trend of injury deaths.	The conclusion have been restated to highlight the key findings in the 1 st and 2 nd paragraph
Note that the recommended road safety education as an intervention to reduce road deaths is not based on the risk factors identified from the study.	This is true but was just speculative. Could easily be deleted from the main document.
- Based on the stated limitations, the main take home message should be that the existing RHDSS does not contain sufficient data that can be used to provide an accurate estimate of risk factors for cause-specific injury deaths.	Agree completely with you and this is incorporated into the main document

REVIEWER	Wilson Odero MD, PhD Professor of Public Health Maseno University, Kenya
REVIEW RETURNED	11-Sep-2012

GENERAL COMMENTS	The authors have satisfactorily addressed all the comments
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