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)	Emergency Department Falls: A Longitudinal Analysis of Revisits and Hospitalizations between Patients who Fell and Patients who did not Fall
AUTHORS	Shankar, Kalpana; Lin, Feng; Epino, Henry; Temin, Elizabeth; Liu, Shan

VERSION 1 – REVIEW

REVIEWER	Allison Tadros West Virginia University, United States
REVIEW RETURNED	18-Jun-2020

GENERAL COMMENTS	I am assuming that a percentage of these patients were already in a skilled nursing facility when the fall occurred. Was this taken into consideration when disposition data was presented? Were these patients previously at home and then after their fall they required a skilled nursing facility? Or is it possible that they were discharged back to the same facility after being evaluated for their fall? I would re-label Table 1 to say you are comparing the demographics of those with falls compared to non-falls.

REVIEWER	Eunhee Lee Hallym University / South Korea
REVIEW RETURNED	21-Jun-2020

GENERAL COMMENTS	The fall in elderly patients and their frequent use of ED are important issue in all countries. However, compared to previous studies, this study could not show better results. This study used large sized national data, but the data is from more than 10 years ago, so it seems difficult to see recent situations. Most of the result tables are difficult to understand, and some table heading is incorrect. There seems to be a need to refine the tables. In particular, table3 and table4 needs to be revised again. Discussion is not sufficiently about the reason for the frequent ED re-admission of the elderly faller and for the short period of re-admission. In order to understand the meaning of the results, I think that additional discussion on the results is necessary.

REVIEWER	Alex Joseph Division of Epidemiology, School of Public Health, SRM Institute of Science and Technology , Kattankulathur, India
REVIEW RETURNED	25-Jul-2020

GENERAL COMMENTS	1) Abstract may be rewritten, sounds very confusing. 2) Study Design, It looks like a secondary data analysis and hence exempted from ethics clearance, so cannot claim this to be a

	longitudinal observational analysis can rather call longitudinal secondary data analysis .Under discussion section again wrongly mentioned as longitudinal study, please correct. 3) In outcomes and later part the term "disposition" is used what is the meant by it in this study, please clarify . 4) Table 1,showing Sex may be rephrased as gender, the option "other" may be explained as footnote, the percentages for the same is shown as 0, Please check. %) 5) Table 3 ,Sub headings may be demarcated, for easy understanding and readability 6) Statement 'Patients who came to the ED with an index visit of a fall were more likely to be discharged home after their fall (61.1% vs 45.0%, p <0.001). Patients who came to the ED for non-fall related visit were more likely to be hospitalized (52.6% vs 35.7%, p<0.001)' is confusing to be included in abstract, since its not the main objective of the study. A comparison of the two groups is not logical since the reasons for ED visit can be different, and may be more life threatening than a fall injury. Those information is not mentioned .

REVIEWER	Allan Bregola University of East Anglia, UK
REVIEW RETURNED	27-Jul-2020

GENERAL COMMENTS	I reviewed the manuscript entitled ‘ED Falls: A Longitudinal Analysis of ED Revisits and Hospitalizations between Patients who Fell and Patients who did not Fall’. The study addresses an important issue in healthcare and provides very interesting information about clinical implications. Also, it is well reported and concise. I have raised minor comments for improving the study reporting and it reading. Title Please write the emergency department instead of ED. This will be clear for all professionals in the health and care areas. Background The sentences ‘However, it is not clear whether these adverse event rates are higher than those of non-fall patients. Identifying such patients can help risk-stratify when deciding disposition, referring to outpatient services, and recommending enrollment into community-based falls-prevention programs' seem too vague and it is not telling to much. Please provide a deeper presentation on this, confirming previous community based falls-prevention have helped in preventing future hospitalizations and ED visits in older participants. The sentence ‘Targeting at-risk older adults, particularly those discharged to home or home health care, is an underexplored, cost-effective mechanism with the potential to reduce ED revisits and improve patient care’ could be well explored while validation the results, in the discussion section. I understood the authors stated this as a study justification, however other points would have more power e.g. Community based falls-prevention; future non-pharmacological clinical trials on this. Also, it would be clear for the reader if the hypotheses of this study are presented. Methods Please, provide in the absolute frequency of participants which data were recruited for this study and if possible, split the baseline frequency between the years (2005-2010).

	Statistical analyses. Please provide a full and detailed procedure of data analysis, including how the variables have been set up into the mathematical model. Results Overall, fallers made approximately 4.78 visits per patient while non-fallers made 3.30 visits per patient. (Table 2). Does this include the baseline visit? To have a better picture of the non-fallers, please state the main(s) reason(s) for Ed visit. On the reasons/related complaint stated in 'fallers who were initially hospitalized returned to the ED sooner for another fall-related complaint compared to non-fall patients (45 days vs 119 days, p<0.001) but non-fallers returned earlier to the ED for any reason (excluding falls) compared to fallers', again would be clear to have the main reasons stated. I understand this is not included in the analysis, however, would provide a better picture of the results and bring originality for the study. Discussion It is well written, however, it is missing a gerontological interpretation of the results. Together with the clinical implications for the person and family, please state the implication for public health. Discuss the preventing programs which showed promising findings on this matter together how future research can address the same limitations/bias the authors have found with this investigation.

VERSION 1 – AUTHOR RESPONSE

Reviewers' Comments to Author:

Reviewer: 1
Reviewer Name: Allison Tadros
Institution and Country: West Virginia University, United States
Please state any competing interests or state 'None declared': None

I am assuming that a percentage of these patients were already in a skilled nursing facility when the fall occurred. Was this taken into consideration when disposition data was presented? Were these patients previously at home and then after their fall they required a skilled nursing facility? Or is it possible that they were discharged back to the same facility after being evaluated for their fall?
Response: We appreciate your question. It would be great if we could link source and disposition. Unfortunately, the details of which facility the patient was sent to is not available in the dataset as it is not that granular. We are able to determine if the patient was sent to a SNF but not link it.

Reviewer: 2
Reviewer Name: Eunhee Lee
Institution and Country: Hallym University / South Korea
Please state any competing interests or state 'None declared': none declared

The fall in elderly patients and their frequent use of ED are important issue in all countries. However, compared to previous studies, this study could not show better results. This study used large sized national data, but the data is from more than 10 years ago, so it seems difficult to see recent situations. Most of the result tables are difficult to understand, and some table heading is incorrect.

There seems to be a need to refine the tables. In particular, table3 and table4 needs to be revised again. Discussion is not sufficiently about the reason for the frequent ED re-admission of the elderly faller and for the short period of re-admission. In order to understand the meaning of the results, I think that additional discussion on the results is necessary.

Response: Thank you for your comments. We have re-labeled Table 1, Table 3 and Table 4 to clarify the content. Unfortunately, due to the administrative nature of this dataset, we cannot surmise the reason for a return ED visit, but make mention that this is a limitation both in the 2nd paragraph of the discussion and the limitations section

Reviewer: 3
Reviewer Name: Alex Joseph
Institution and Country: Division of Epidemiology, School of Public Health, SRM Institute of Science and Technology , Kattankulathur, India
Please state any competing interests or state ‘None declared’: None to declare

1) Abstract may be rewritten, sounds very confusing.
Response: We clarified the objective and design section of the abstract to better elucidate the nature of this analysis.
2) Study Design, It looks like a secondary data analysis and hence exempted from ethics clearance, so cannot claim this to be a longitudinal observational analysis can rather call longitudinal secondary data analysis .Under discussion section again wrongly mentioned as longitudinal study, please correct.

Response: Thank you—we will change to longitudinal secondary data analysis.

3) In outcomes and later part the term "disposition" is used what is the meant by it in this study, please clarify
Response: We appreciate your question. We use the term “disposition” as where the patient was discharged. We have clarified this in the first sentence of the outcomes section.

4) Table 1,showing Sex may be rephrased as gender, the option "other" may be explained as footnote, the percentages for the same is shown as 0, Please check.%)
Response: Thank you for pointing this out. The percent for fall was 0.03% and nonfall was 0.04%. We have changed this in the table.

5) Table 3 ,Sub headings may be demarcated, for easy understanding and readability
Response: We have underlined the first set up sub-headings to demarcate this from the sections below.

6) Statement 'Patients who came to the ED with an index visit of a fall were more likely to be discharged home after their fall (61.1% vs 45.0%, p <0.001). Patients who came to the ED for non-fall related visit were more likely to be hospitalized (52.6% vs 35.7%, p<0.001)' is confusing to be included in abstract, since its not the main objective of the study. A comparison of the two groups is not logical since the reasons for ED visit can be different, and may be more life threatening than a fall injury. Those information is not mentioned.

Response: We have removed the statement on non-fallers as we agree that the comparison is not the same.

Reviewer: 4
Reviewer Name: Allan Bregola

Institution and Country: University of East Anglia, UK
Please state any competing interests or state 'None declared': None declared.

I reviewed the manuscript entitled 'ED Falls: A Longitudinal Analysis of ED Revisits and Hospitalizations between Patients who Fell and Patients who did not Fall'. The study addresses an important issue in healthcare and provides very interesting information about clinical implications. Also, it is well reported and concise. I have raised minor comments for improving the study reporting and it reading.

Title
Please write the emergency department instead of ED. This will be clear for all professionals in the health and care areas.
Response: Thank you for your suggestion. We changed the title to avoid abbreviations.

Background
The sentences 'However, it is not clear whether these adverse event rates are higher than those of non-fall patients. Identifying such patients can help risk-stratify when deciding disposition, referring to outpatient services, and recommending enrollment into community-based falls-prevention programs' seem too vague and it is not telling to much. Please provide a deeper presentation on this, confirming previous community based falls-prevention have helped in preventing future hospitalizations and ED visits in older participants.

Response: Thank you for your comment. We have added the following section into this paragraph to further flush out this statement. "Previous community based falls-prevention have helped prevent ED use and future hospitalizations. For instance, Mikolaizak et al, found that older fallers who adhered to a paramedic initiated assessment and intervention had fewer falls and fall-related ED presentations at 6 months. The PROFET trial showed that a multifactorial intervention among ED falls patients decreased recurrent falls and the odds of hospital admission at 12 months.'

The sentence 'Targeting at-risk older adults, particularly those discharged to home or home health care, is an underexplored, cost-effective mechanism with the potential to reduce ED revisits and improve patient care' could be well explored while validation the results, in the discussion section. I understood the authors stated this as a study justification, however other points would have more power e.g. Community based falls-prevention; future non-pharmacological clinical trials on this. Also, it would be clear for the reader if the hypotheses of this study are presented.
Response: We have added verbage in to reflect this suggestion in the introduction and have added in our hypothesis.

Methods
Please, provide in the absolute frequency of participants which data were recruited for this study and if possible, split the baseline frequency between the years (2005-2010).
Response: Thank you for this comment. Patients were restricted to age > 65 years. If a patient had non-fall visit before fall visit with age>65, that specific non-fall visit was not counted. However, if he/she had a non-fall visit after a fall visit, that's counted. For patients who never had a fall visit, all of their non-fall visits were counted. We have added an additional table (Table 2a) to show the breakdown.

Statistical analyses. Please provide a full and detailed procedure of data analysis, including how the variables have been set up into the mathematical model.

Response: We have added a few additional sentences into the statistical analysis section to address this query.

Results
Overall, fallers made approximately 4.78 visits per patient while non-fallers made 3.30 visits per patient. (Table 2). Does this include the baseline visit?
Response: Yes, if those counted as an index visit was classified as a baseline visit.

To have a better picture of the non-fallers, please state the main(s) reason(s) for Ed visit.
On the reasons/related complaint stated in 'fallers who were initially hospitalized returned to the ED sooner for another fall-related complaint compared to non-fall patients (45 days vs 119 days, $p<0.001$) but non-fallers returned earlier to the ED for any reason (excluding falls) compared to fallers', again would be clear to have the main reasons stated. I understand this is not included in the analysis, however, would provide a better picture of the results and bring originality for the study.
Response: These patients came in for a multitude of reasons but due to funding issues, we do not have the bandwidth to query the database and capture these specific complaints or reasons for visit.

Discussion
It is well written, however, it is missing a gerontological interpretation of the results. Together with the clinical implications for the person and family, please state the implication for public health. Discuss the preventing programs which showed promising findings on this matter together how future research can address the same limitations/bias the authors have found with this investigation.
Response: Thank you for this feedback. We have added more evidence in the conclusion paragraph to discuss the implication for future research.

Once again, thank you for the opportunity to revise our manuscript, and we look forward to hearing from you.

VERSION 2 – REVIEW

REVIEWER	Allison Tadros West Virginia University, US
REVIEW RETURNED	09-Sep-2020

GENERAL COMMENTS	Well written and interesting study.

REVIEWER	Alex Joseph School of Public Health, SRM Institute of Science and Technology, Kattankulathur, India
REVIEW RETURNED	07-Sep-2020

GENERAL COMMENTS	It will be appropriate to provide the IEC approval reference number, if applicable. the reference to IRB may me rewritten.

REVIEWER	Allan Bregola University of East Anglia
REVIEW RETURNED	05-Sep-2020

GENERAL COMMENTS	none.