

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Long-term physical and psychological outcomes after out-of-hospital cardiac arrest– Protocol for a national cross-sectional survey of survivors and their relatives (the DANCAS survey)
<b>AUTHORS</b>	Joshi, Vicky; Tang, Lars; Borregaard, Britt; Zinckernagel, Line; Mikkelsen, Tina; Taylor, Rod; Christiansen, Sofie; Nielsen, Jørgen; Zwisler, Ann Dorthe

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Emily Andrew Ambulance Victoria, Australia
<b>REVIEW RETURNED</b>	13-Nov-2020

<b>GENERAL COMMENTS</b>	<p>Thank you to the authors for a well-written manuscript describing the protocol for the DANCAS study. I have only minor comments for the authors:</p> <ul style="list-style-type: none"><li>- Under 'Eligibility Criteria': The authors state that the OHCA survivor will be alive at least 10 months post-arrest. This is the first time this is mentioned. Is this a requirement? Everywhere else in the manuscript states that survivors will be alive 30 days post-arrest. If 10 months is the case, it may affect your sample size expectations also.</li><li>- Under 'Data Collection': please clarify if relatives' survey links will be sent to their own E-boks address, or whether the link will be sent to the OHCA patient's address.</li><li>- The IQCODE-CA, line 46: please clarify whether the informants are requested to compare the current cognitive function of the patient (i.e. not of the relative) with pre-cardiac arrest cognitive function.</li><li>- MCSI: Please clarify if all relatives will complete this survey or only 'long-term' caregivers. If only long-term caregivers, a definition will be required of 'long-term'.</li><li>- 'Sample size considerations', line 21: this is the first mention of the four time interval groups and is confusing as they are not explained properly until later in the manuscript.</li><li>- 'Sample size considerations', line 25: please define 'CPR numbers'.</li><li>- 'Planned analysis', line 35: I would suggest using 'percentages' rather than 'frequencies'.</li><li>- 'Planned analysis', line 40: Did the authors consider a test for trend?</li><li>- 'Discussion', page 12, line 56: I agree this is the most significant limitation of your study. You could also state that you will present the baseline demographics / characteristics of non-responders so that the characteristics of this population are clear.</li></ul>
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<b>REVIEWER</b>	Thomas Lindner Stavanger University Hospital Norway
<b>REVIEW RETURNED</b>	19-Nov-2020

<b>GENERAL COMMENTS</b>	<p>Thank you for the possibility to review your protocol Long-term physical and mental outcomes after out-of-hospital cardiac arrest– Protocol for a national cross-sectional survey of survivors and their relatives (the DANCAS survey)</p> <p>I have a few questions and remarks</p> <p>1 The access to the DHRCA database. Which approval is necessary for that? Is that a mandatory database for all Danish citizens? Have every OHCA registered approved the data access? Which intuitions ore persons are eligible for the access to DHRCA ?</p> <p>2 Should you not limited the population to patients with “witnessed OHCA” (in addition to your stated criteria)? Thinking that the emotional reaction from relatives may be quiet different in the relative for “witnessed OHCA” compared to be relative to an “not witnessed OHCA”?</p>
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<b>REVIEWER</b>	Sarah Voss University of the West of England, UK
<b>REVIEW RETURNED</b>	23-Nov-2020

<b>GENERAL COMMENTS</b>	<p>This protocol paper describes a cross-sectional survey of cardiac arrest survivors and their close relatives. The study is important as there is very limited published evidence on longer term physical and psychological outcomes for OHCA patients. The protocol is clear and very well written and describes a well-planned study. I have only a few minor comments for the authors’ consideration.</p> <p>Consider revising term ‘mental outcomes’ to ‘psychological outcomes’</p> <p>Page 5 of 28; line 24: improved from 4% to 16%...</p> <p>Page 12 of 28: In sample size considerations: The four time interval groups are referred to but are not defined until the next paragraph – could these be defined earlier in the manuscript? What are CPR numbers?</p>
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### VERSION 1 – AUTHOR RESPONSE

Response to reviewers

Reviewer: 1

Dr. Emily Andrew, Ambulance Victoria, Victoria, Australia Comments to the Author:

Thank you to the authors for a well-written manuscript describing the protocol for the DANCAS study. I have only minor comments for the authors:

- Under ‘Eligibility Criteria’: The authors state that the OHCA survivor will be alive at least 10 months post-arrest. This is the first time this is mentioned. Is this a requirement? Everywhere else in the manuscript states that survivors will be alive 30 days post-arrest. If 10 months is the case, it may affect your sample size expectations also.

Author response: Thank you for your comment. You are correct 'alive at least 30 days post-cardiac arrest' is the correct inclusion criteria, this has been corrected.

- Under 'Data Collection': please clarify if relatives' survey links will be sent to their own E-boks address, or whether the link will be sent to the OHCA patient's address.

Author response: The link for the relatives' survey will be included only in the invitation to participate sent to the OHCA survivors, either to the survivors' eBoks address or postal address. This has been clarified in the text.

- The IQCODE-CA, line 46: please clarify whether the informants are requested to compare the current cognitive function of the patient (i.e. not of the relative) with pre-cardiac arrest cognitive function.

Author response: The informants (relatives) are requested to compare the current cognitive function with pre-cardiac arrest cognitive function of the survivor; this has been clarified in the text.

- MCSI: Please clarify if all relatives will complete this survey or only 'long-term' caregivers. If only long-term caregivers, a definition will be required of 'long-term'.

Author response: All relatives will complete the MCSI survey, for clarity the term 'long-term' has been removed.

- 'Sample size considerations', line 21: this is the first mention of the four time interval groups and is confusing as they are not explained properly until later in the manuscript.

Author response: This phrase has been removed from the 'Sample size considerations' section and further explanation on the time interval groups has been added to the section 'Planned analysis': 'To investigate changes in physical and psychological outcomes over time, participants will be stratified into four groups...'

- 'Sample size considerations', line 25: please define 'CPR numbers'.

Author response: This has been corrected to 'Danish personal identification number'.

- 'Planned analysis', line 35: I would suggest using 'percentages' rather than 'frequencies'.

Author response: This has been corrected in the text.

- 'Planned analysis', line 40: Did the authors consider a test for trend?

Author response: Thank you for this very useful comment. We did not consider this, but agree that this could be useful. We have added a comment about that in the first paragraph of the 'Planned analysis' section: '... time-trend analyses will be performed.'

- 'Discussion', page 12, line 56: I agree this is the most significant limitation of your study. You could also state that you will present the baseline demographics / characteristics of non-responders so that the characteristics of this population are clear.

Author response: Thank you very much for this suggestion, we agree and have added the following text to the end of the fourth paragraph of the Discussion: 'To ensure the characteristics of the total survey population are clear, baseline characteristics of non-responders will also be presented.'

Reviewer: 2

Dr. T. Lindner, Stavanger Univ Hosp

Comments to the Author:

Thank you for the possibility to review your protocol Long-term physical and mental outcomes after out-of-hospital cardiac arrest– Protocol for a national cross-sectional survey of survivors and their relatives (the DANCAS survey)

I have a few questions and remarks

1. The access to the DHRCA database. Which approval is necessary for that? Is that a mandatory database for all Danish citizens? Have every OHCA registered approved the data access?

Which intuitions ore persons are eligible for the access to DHRCA ?

Author response: Thank you for your questions. The Danish Cardiac Arrest Registry is a register that collects data on cardiac arrest outside hospitals in Denmark for the purposes of quality improvement. The pre-hospital managers of the five Danish regions are responsible for collecting the data, have ownership of their own data, and give approval for data access on behalf of OHCA survivors. Any institution or person who wishes access to data from the DHRCA must have a research protocol approved by the DHRCA steering group.

No corrections have been made to the manuscript in connection to these queries.

2. Should you not limited the population to patients with “witnessed OHCA” (in addition to your stated criteria)? Thinking that the emotional reaction from relatives may be quiet different in the relative for “witnessed OHCA” compared to be relative to an “not witnessed OHCA”?

Author response: Thank you for this raising this point. We agree that the emotional reaction from relatives may be quiet different dependent on whether they witnessed/did not witness the OHCA, hence, we will include all relatives in the survey (regardless of whether they witnessed the OHCA or not) to investigate this point further. In addition, the witness/not witness status will be determined via self-report from the relatives themselves; therefore, we would not be able to include/exclude relatives on this basis until after the survey responses have been received.

No corrections have been made to the manuscript in connection to this question.

Reviewer: 3

Dr. Sarah Voss, University of the West of England Comments to the Author:

This protocol paper describes a cross-sectional survey of cardiac arrest survivors and their close relatives. The study is important as there is very limited published evidence on longer term physical and psychological outcomes for OHCA patients. The protocol is clear and very well written and describes a well-planned study. I have only a few minor comments for the authors' consideration.

-Consider revising term 'mental outcomes' to 'psychological outcomes'

Author response: Thank you for your suggestion, the term 'mental' has been replaced with 'psychological' throughout the manuscript.

-Page 5 of 28; line 24: improved from 4% to 16%...

Author response: Thank you. This error has been corrected.

-Page 12 of 28: In sample size considerations:

The four time interval groups are referred to but are not defined until the next paragraph – could these be defined earlier in the manuscript?

Author response: Thank you for this comment. We agree the mention of the four time interval groups in the sample size considerations is confusing and this line has been removed. The four time interval groups refer to data analysis methods and does not have a bearing on data collection, therefore we have chosen not to discuss the time interval groups earlier in the methods section to avoid confusion with data collection. However, we have added text to the first objective of the study to indicate earlier in the manuscript that we intend to look at change in outcomes over time. Text has been added to objective 1 at the end of the introduction section: 'and how these change over time'. In addition, further explanation of the time interval groups has been added to the section 'Planned analysis': 'To investigate changes in physical and psychological outcomes over time, participants will be stratified into four groups...'

-What are CPR numbers?

Author response: Thank you for this comment, CPR numbers are the Danish terminology for Danish personal identification numbers. 'CPR number' was written in error and has been corrected in the text to 'Danish personal identification number'.

### VERSION 2 – REVIEW

<b>REVIEWER</b>	Andrew, Emily Ambulance Victoria, Victoria, Australia
<b>REVIEW RETURNED</b>	08-Feb-2021
<b>GENERAL COMMENTS</b>	Thank you to the authors for their corrections. I have no other concerns with this manuscript.

### VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Dr. T. Lindner, Stavanger Univ Hosp

I have a few questions and remarks

1. The access to the DHRCA database. Which approval is necessary for that? Is that a mandatory database for all Danish citizens? Have every OHCA registered approved the data access?

Which intuitions ore persons are eligible for the access to DHRCA ?

Author response: Thank you for your questions. The Danish Cardiac Arrest Registry is a register that collects data on cardiac arrest outside hospitals in Denmark for the purposes of quality improvement. The pre-hospital managers of the five Danish regions are responsible for collecting the data, have ownership of their own data, and give approval for data access on behalf of OHCA survivors. Any institution or person who wishes access to data from the DHRCA must have a research protocol approved by the DHRCA steering group.

Author response 2: Additional text has been added to the manuscript under 'Setting and participants':

'The DHRCA collects data on OHCA in Denmark for the purposes of quality improvement. The pre-hospital managers of the five Danish regions are responsible for collecting the data, have ownership of their own data, and give approval for data access on behalf of OHCA survivors. Access to DHRCA data is granted via approval of a research protocol by the DHRCA steering group.'

2. Should you not limited the population to patients with "witnessed OHCA" (in addition to your stated criteria)? Thinking that the emotional reaction from relatives may be quiet different in the relative for "witnessed OHCA" compared to be relative to an "not witnessed OHCA"?

Author response: Thank you for this raising this point. We agree that the emotional reaction from relatives may be quiet different dependent on whether they witnessed/did not witness the OHCA, hence, we will include all relatives in the survey (regardless of whether they witnessed the OHCA or not) to investigate this point further. In addition, the witness/not witness status will be determined via

self-report from the relatives themselves; therefore, we would not be able to include/exclude relatives on this basis until after the survey responses have been received.

Author response 2: Text in the second paragraph of the introduction states the need to investigate associations between witnessing the OHCA and the consequences for relatives:

‘Yet, very few research studies have investigated the consequences of OHCA for relatives in the longer term,<sup>23 24</sup> or how these are associated with witnessing the event...’

To clarify that the survey will ask relatives if they witnessed the OHCA, additional text has been added to the last paragraph on ‘Self-report outcome measures in the DANCAS surveys:

‘One question will ask if they witnessed the OHCA.’