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)	Experiences among firefighters and police officers of responding to out-of-hospital cardiac arrest in a dual dispatch programme in Sweden: an interview study
AUTHORS	Hasselqvist-Ax, Ingela; Nordberg, Per; Svensson, Leif; Hollenberg, Jacob; Joelsson-Alm, Eva

VERSION 1 – REVIEW

REVIEWER	Kim Kirby University of the West of England, Bristol, England
REVIEW RETURNED	06-Jun-2019

GENERAL COMMENTS	I enjoyed reading this paper and I think that it adds new knowledge to the existing literature. I think it is an important research study that addresses a phenomenon that has not been well researched previously. Review - Experiences among firefighters and police officers of saving lives in out-of-hospital cardiac arrest in a dual dispatch programme I think that this is an interesting and generally well written paper. There are some areas where the English could be improved. • Title – I wasn't sure that 'saving lives' was the most appropriate term to be used in the title as the majority of OHCA patients will not survive. Would 'responding to OHCA' or something similar be more appropriate? • The aims are clearly described • Page 5 (line 13), should this be 'purposive' and not 'purposeful'? • No description of when, or if, data was anonymised. • Page 7 (line 7) how was agreement reached between researchers? • Page 8 (table 3), it would be good to see a percentage, or mean of the columns, where appropriate in this table. • Page 9 (top of page) it would be good to discuss the categories and sub categories here. • Page 12 (line 4) rescue team should be in black here. • No discussion of data saturation, was data saturation important in this study? • No discussion of recruiting a self-selecting sample and the risk of bias. • No discussion of the influence of reflexivity. • Page 18 – the figure needs a title.

REVIEWER	So Yeon Joyce Kong

	- Strategic Research, Laerdal Medical, Stavanger, Norway - Laboratory of Emergency Medical Services, Seoul National University Hospital, Seoul, Korea
REVIEW RETURNED	03-Jul-2019

GENERAL COMMENTS	Overall, interesting qualitative study on experiences of first responders on OHCA patients. I have a few minor comments as below: - Study setting: Stockholm County area is incorrect (6.5 km2 -> 6,500?). Please check the number. - In Study setting and dispatch, please provide more detailed information on how FRs are being dispatched. How many FRs are being contacted for dispatch, etc. Information such as police force joining the dual dispatch programme later than the firefighters should also be included in the method section to clearly describe dual dispatch system in Stockholm. - It would be also helpful for readers if authors include brief description of FR protocols for handling OHCA situations, what their responsibilities as FR, mandatory CPR training annually (?), etc. - Line 7 on page 5: Eligible -> Eligible participants were - The critical incident of “a cardiac arrest situation” needs to be more clearly defined. Will it be of any cardiac arrest situation (both cardiac origin and non-cardiac origin such as trauma and drowning?), cardiac arrest of all ages including infant, children? - Any information where there were bystanders already performing CPR and the patients had ROSC before the arrival of the study participants (FR)?

VERSION 1 – AUTHOR RESPONSE

Reviewer #1
Title – I wasn’t sure that ‘saving lives’ was the most appropriate term to be used in the title as the majority of OHCA patients will not survive. Would ‘responding to OHCA’ or something similar be more appropriate?
We agree that ‘responding to OHCA’ is more appropriate and have changed the title accordingly.
Page 5 (line 13), should this be ‘purposive’ and not ‘purposeful’?
We have changed to “purposive” (Page 3, line 1).
No description of when, or if, data was anonymised.
In the final step when the sub-categories were merged into categories and finally time-sequences, data were anonymised for the researchers. We could however backtrack statements as given by a police officer or a firefighter by their numbers (P1, F6 etc.) in order to quote representative statements to exemplify. This has now been clarified in the manuscript by adding the following sentence (Page 5, line 6): “In the analysis, the participants were anonymized for the researchers.”
Page 7 (line 7) how was agreement reached between researchers?
Interpretation requires a continuous dialogue between the researchers to find the core of the collected CIs. We have added (Page 5, line 5):“….after dialogue between the co-researchers”…
Page 8 (table 3), it would be good to see a percentage, or mean of the columns, where appropriate in this table.
We have added percentages were it is appropriate in Table 3 (Page 6).
Page 9 (top of page) it would be good to discuss the categories and sub categories here.

We have written a sentence about categories and sub-categories (Page 6, line 11): "During the analysis seven categories and 14 sub-categories emerged which reflects three major time sequences describing the temporal continuity of the OHCA situation."
Page 12 (line 4) rescue team should be in black here.
This has been changed (Page 10, line 1).

No discussion of data saturation, was data saturation important in this study?
According to Flanagan data saturation is not a concept used in the Critical Incident Technique. Instead it is recommended that approximately 50-100 CIs are sufficient for analysis if it´s a well-defined phenomenon being studied (e.g. OHCA) (ref 15 and 19). This is addressed at page 2, line 22.
No discussion of recruiting a self-selecting sample and the risk of bias.
We have added the following sentences to the discussion (Page 12, line 22): "Selecting volunteers for interviews could have introduced bias in terms of a non-representative sample. Different fire- and police stations around the County were thus chosen, as well as gender and varying ages among participants to obtain as rich information as possible about the research subject. There is always a risk of recall bias in interview studies, especially if the incident took place months or years ago. All participants had however very clear memories of the recounted OHCA situations, and could describe them in detail.
And also in Strengths and limitations of this study:" One limitation of the study is the risk of recall bias."
No discussion of the influence of reflexivity.
This is an important remark and reflects a hazard in qualitative studies if reflexivity is not taken into account. The members of the research group have different and broad experiences of quantitative and qualitative research, pre- and in-hospital cardiac arrest, cardiology, anaesthesia and critical care. These experiences could have influenced the interpretations, as well as the results.
We have added the following (Page 4, line 4): "(IHA), a nurse anesthetist and teacher with professional knowledge in OHCA research, especially CPR/defibrillation and dual dispatch."
And (Page 13, line 8):"Moreover, the research group has experiences in cardiology, out-of-hospital cardiac arrest, dual dispatch (PN, LS, JH), and other domains such as intensive care and qualitative studies (EJA). This strengthens the results, but also raises questions about reflexivity and bias, which were discussed during the whole process of collecting and interpreting data."
Page 18 – the figure needs a title.
The title of Fig 1 is added: "Time sequences, categories and sub–categories."
Reviewer #2
Study setting: Stockholm County area is incorrect (6.5 km2 -> 6,500?). Please check the number.
Thank you for pointing this out. We have altered the figure to 6519 km2 (Page 1, line 23).
In Study setting and dispatch, please provide more detailed information on how FRs are being dispatched. How many FRs are being contacted for dispatch, etc. Information such as police force joining the dual dispatch programme later than the firefighters should also be included in the method section to clearly describe dual dispatch system in Stockholm.
Dispatch is now explained more in detail (Page 2, line 1): "….first dispatches two ambulances staffed with specialist nurses and emergency medical technicians performing advanced life support.17 In special circumstances such as major trauma, drowning and pediatric cardiac arrests, a physician-staffed rapid response vehicle is alerted. FRs trained in BLS, and equipped with AEDs are also dispatched, primarily the fire fighters and thereafter the police18 The EMS, police force, and fire department are alerted by the common emergency number (112). In Stockholm County there are 40 fire stations and 30 police stations. Depending on time of day and type of vehicles being dispatched, the number of attending staff varies between 4 to10 in average. The police are considered as an extra resource in OHCA, and cannot always engage depending on other ongoing missions."
It would be also helpful for readers if authors include brief description of FR protocols for handling OHCA situations, what their responsibilities as FR, mandatory CPR training annually (?), etc.
The following paragraph has been added: (Page 2, line 13): "CPR training amongst FRs

Annual adult and pediatric BLS training is recommended for FRs by European guidelines in CPR18 and the Swedish Resuscitation Council. However compliance to these recommendations could differ between participating organizations. It is mandatory for FRs to start CPR if first on scene, unless obvious signs of death exists."
Line 7 on page 5: Eligible -> Eligible participants were
This has been changed (Page 2, line 21) "Eligible participants were…"

The critical incident of "a cardiac arrest situation" needs to be more clearly defined. Will it be of any cardiac arrest situation (both cardiac origin and non-cardiac origin such as trauma and drowning?), cardiac arrest of all ages including infant, children?
We have added the following sentence in Abstract under "Participants": "…of cardiac or non-cardiac origin.", and the following sentence in the Methods section (Page 1, line 20): "OHCAs were included independent of etiology (medical or non-medical) and age of the victim."
Any information where there were bystanders already performing CPR and the patients had ROSC before the arrival of the study participants (FR)?
These variables were not specifically addressed in the interview guide. However some of the participants made remarks about bystanders/relatives in conjunction with the OHCA, which after analysis generated the category "The bystanders".
Kindly indicate in the research checklist a page number against each criterion.
The COREQ checklist has been revised and uploaded with corresponding page numbers.

VERSION 2 – REVIEW

REVIEWER	Kim Kirby South Western Ambulance Service
REVIEW RETURNED	23-Sep-2019

GENERAL COMMENTS	Thank you for allowing me to review this manuscript. I think it is interesting and well written. I noticed a couple of things that need revision. Line 22 page 8, 'were' to 'where'. Line 11, page 10 I don't understand this sentence

REVIEWER	So Yeon Joyce Kong Laerdal Medical, Strategic Research, Stavanger, Norway
REVIEW RETURNED	12-Sep-2019

GENERAL COMMENTS	Authors did a great job revising the manuscript. I recommend the manuscript for publication.

VERSION 2 – AUTHOR RESPONSE

We have made the following changes: (Line 22, page 8): "were" is replaced with "where".

(Line 11, page 10): We have written the following sentence: "The aftermath was the time period from when the FRs left the scene, and as long as vivid memories of the cardiac arrest were recalled and could be recounted by the participants."