

## Peer Review File

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### Review Comments:

#### Reviewer A:

It is an interesting well written and designed investigation. As pointed out by the Authors, the main novelty is the unique population. Just a few issues.

1. Please add a paragraph describing differences (if any) with investigations performed in European countries and/or in low-income countries.

**Reply 1:** Thank you reviewer for your kind words and for bringing up this important point. We have now added a paragraph comparing our study findings with those of European studies from United Kingdom, Sweden, Netherlands, and Denmark and highlighting the differences. In our study, we found age and initial shockable rhythm to be independent predictors of survival to hospital discharge. However, we did not find significant sex-differences in rates of bystander CPR, presence of an initial shockable rhythm, rates of defibrillation, and discharge survival. In comparison, in two studies from Denmark, conducted by Wissenberg et al., men had a significantly higher likelihood of receiving bystander CPR (32.9% men vs. 25.9% women;  $p < 0.001$ ), and having an initial shockable rhythm (32.6% men vs. 17.2% women;  $p < 0.001$ ). Yet, in another study from Netherlands, conducted by Blom et al., women were less likely to receive bystander CPR (72.7% men vs. 67.9% women;  $p < 0.001$ ), even when the cardiac arrest was witnessed. Women also had a significantly lower likelihood of an initial shockable rhythm and discharge survival rate compared to men in this study (OR: 0.49; 95%CI: 0.40-0.60;  $p = 0.03$ ).

**Changes in text:** As suggested we have now discussed the above-mentioned studies in paragraph 5 of the section “Discussion,” and highlighted it for easy visibility.

2. Were patients submitted to urgent coronary angiography?

**Reply 2:** Thank you reviewer for this important question. Yes, patients were taken for urgent left heart catheterization based on their clinical, telemetry, and EKG findings. Factors such as anoxic brain injury evident on the initial head CT, clinical picture suggestive of increased risk of irreversible neurological damage, severe hemodynamic instability precluding safe catheterization are likely to have influenced the number of patients who were taken for coronary angiography. No significant sex-differences were found between women (2.5%) and men (2.7%) taken for urgent coronary angiography ( $p = 0.94$ ).

**Changes in text:** Number of women and men taken for urgent coronary angiography is reported under “in-hospital parameters and outcomes” in **Table 1** and in the

manuscript text under section “**Results**” paragraph 2.

3. We suggest to delete the paragraph "aims", since aims were described in the Introduction section.

**Reply 3:** Thank you reviewer for your insightful comment. We have now deleted the section “Aims” from our manuscript.

**Changes in the text:** Section “Aims” has been deleted from the manuscript (see page 8).

**Reviewer B:**

Overall, this is a well written paper about a specific topic in out of hospital cardiac arrest. The paper is limited by the fact that it is a single site and does not include the overall EMS system. Some of the strengths include more detailed information about in-hospital care.

1. Abstract: Well crafted, represents the paper.

**Reply 1:** Thank you Reviewer. We appreciate your kind comment.

2. Introduction: Addresses background and intent. No edits.

**Reply 2:** Thank you once again Reviewer, we truly appreciate your kind feedback.

3. Methods: The methods are well written. They acknowledge they are part of the large public hospital system in NYC, I am curious to know why they would not have used system data for a larger cross section? Also I would like to see EMS agency identified, even with anonymous designator, not every arrest in NYC is worked and transported by NYFD.

**Reply 3:** Thank you Reviewer for these valuable clarifications. As per our study protocol we sought to first evaluate racial and sex-differences in outcomes after out-of-hospital cardiac arrest (OHCA) at our tertiary care public hospital prior to expanding our study and collecting system wide data. Now that we have insight into our hospital’s OHCA outcomes and the factors that could be responsible for our study findings, we plan on presenting our results to the NYC H+H central office to obtain the necessary approval for expanding our study and accessing system-wide data. As ours is a public hospital, all cardiac arrests presenting to our ED via ambulance are transported by FDNY. However, information regarding whether FDNY has contracts with independent EMS agencies is not available to us. Additionally, all our ambulance call reports completed by EMS have the FDNY seal/stamp on them.

4. Results: The results section would benefit with starting out with a regular Utstein flow chart from the total worked arrests to outcome, this would give a common context

that is comparable to other papers for readers to understand the setting. Another addition would be the social vulnerability index of the census tract where the patient came from. This is open source data on map layer from the census that is easy to overlay EMS events on. This has been a good way to illustrate community factors.

**Reply 4:** Thank you so much Reviewer for this great suggestion. We have now included an Utstein style flowchart of out-of-hospital cardiac arrests brought to our hospital by EMS and the outcome of worked arrests. Additionally, we have mapped the social vulnerability index of the census tract to which each patient included in this study belonged. The median social vulnerability index for this patient population was “High” at 0.876

**Changes in text:** Utstein style flowchart of out-of-hospital cardiac arrests brought to our hospital by EMS and the outcome of worked arrests has included as “**Figure 1**,” in section “Results” paragraph 1. The social vulnerability index of the census tract to which each included patient in this study belonged to is presented in **Figure 2** in section “Results,” subsection “Patient Characteristics,” paragraph 1. The median social vulnerability index for this patient population was “High” at 0.876 and included in within the same section.

5. The details of the hospital admission and data points they abstracted add a lot to the paper. This level of detail is not often included in papers about arrest.

**Reply 5:** Thank you so much Reviewer for this kind feedback. We are glad that you found the details of the hospital admission worthwhile and unique compared to available literature on cardiac arrest.

From the definitions section:

They use the term “response” time to describe “reflex” time. Response time is generally defined as the time from the unit gets notified of the call to when they arrive (ie. What the actual EMS agency does), and does include the time interval before the EMS agency is notified of the call. Reflex time is what the caller actually experiences, from first ring, to address verification, call processing, EMS and dispatch. Reflex time is always important to track and report because there often delays before the EMS unit and other responders are even made aware of the call. The paper describes reflex time but calls it response time which can be confusing.

Analysis is appropriate. The CAHP score is a nice addition to the paper.

**Reply 5:** Thank you so much Reviewer for your kind feedback. We are truly appreciative. We have now changed it to reflex time instead of “response” time.

**Changes in text:** “Response” time has been changed to “reflex” time throughout the manuscript and highlighted for easy visibility.

Discussion: Well written and appropriately referenced.

**Reply 6:** Thank you so once again Reviewer. We are glad to learn that you found our Discussion section to be well written.

**Reviewer C:**

This is a very well done study and delivers the result. Limitation I see here is that, n is small and can not be generalized.

One question if hypothermia use was there for these patients.

**Reply 1:** Thank you Reviewer for this valuable clarification. Yes, our institution follows a predefined hypothermia protocol which was administered to patients in this study if they met the eligibility criteria outlined in our institution's protocol. We have detailed the rates of administration of hypothermia under the term "targeted temperature management" in Table 1, under "in-hospital parameters and outcomes." In this study 37.8% of women and 36.3% of men received hypothermia and no significant sex-differences were found ( $p=0.84$ ).

**Changes in the text:** We have detailed the rates of administration of hypothermia under the term "targeted temperature management" in Table 1 under "in-hospital parameters and outcomes." We have also included the rates of targeted temperature management (hypothermia) in women and men within the main manuscript text (paragraph 2, section "Results") and highlighted it for easy visibility.

Study can be accepted after final proof reading.

Although small study but well done with adequate result.

Strong scientific question with appropriate statistical method use.

**Reply 2:** Thank you so much Reviewer for these kind comments. We really appreciate it.

**Re-Review Comment:**

In the title and text please change the phrase 'Racial' and 'Race' to a term like 'ethnic background' or similar. The term 'race' is not accurate to describe the differences in skin color or ethnic background between humans.

**Response:** Thank you reviewer for this insightful comment. We have now replaced the terms "race" and "racial" with either "ethnic" or "ethnic background" depending on the context in the title and throughout the text and its accompaniments.

**Changes in text:**

1. Changed Title to "ethnic and sex-based differences in outcomes after out-of-hospital cardiac arrest: a glimpse of the largest municipal healthcare system in the United States" (line 4-5).

2. Changed Running Title to “OHCA: ethnic and sex-based disparities in outcomes” (line 12).
3. Changes to manuscript text: replaced the terms “race” and “racial” with either “ethnic” or “ethnic background” depending on the context in sections “Abstract” (line 104, 105, 113, 119, 122), “Introduction” (132, 135, 140, 142, 145), “Data Extraction” (186), “Clinical outcomes” (268), “Discussion” (281, 283, 289, 291-292, 305, 311, 325, 328, 370, 375-377) and “Conclusion” (384, 389).
4. Changes to Table 1: title changed to “ethnic and sex-based differences in out-of-hospital cardiac arrest event characteristics and outcomes,” and “race” changed to “ethnicity” in the table subheading.
5. Change to Supplementary Table 2: “race” changed to “ethnicity” in the table subheading.