Author’s response to reviews

Title: Differences in pain treatment between surgeons and anesthesiologists in a physician staffed prehospital emergency medical service: a retrospective cohort analysis

Authors:
Stefan Schaller (s.schaller@tum.de)
Felix Kappler (f.kappler@gmx.de)
Claudia Hofberger (claudia.hofberger@gmail.com)
Jens Sattler (jenssattler@gmx.net)
Richard Wagner (richard.wagner@tum.de)
Gerhard Schneider (gerhard.schneider@tum.de)
Manfred Blobner (m.blobner@tum.de)
Karl-Georg Kanz (karl-georg.kanz@tum.de)

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Dear Kemalettin Koltka, M.D..

COMMENT: Thank you for giving us the opportunity to improve our manuscript. We have provided a point-to-point response to all the questions raised by the reviewers.

Editor Comments: Dear Authors, I have read your manuscript with great interest; but I agree the second reviewers comments.

If you have data addition of any change in drug choice according to pain level will increase the value of this paper.

ANSWER: We agree. Unfortunately, the frequency of which the pain levels have been documented did not satisfy our needs of presenting unbiased data only. Nevertheless, we present some data as requested in our response to reviewer #2.
Is there a change between older and younger doctors in prescription choices.

ANSWER: We do not present the age of the physicians in our study because of local privacy regulations. However, we have included the factor resident and specialist in the multivariate analysis (consequently specialists mostly tend to be older). Residents use more opioids (table 4).

Ayse Baysal, MD (Reviewer 2): I read the article on analgesic usage by anesthesiologists and surgeons in emergency care. The article investigates the choices of analgesic use by physicians and points out on important issues and I think it is a very important topic that needs to be discussed by physicians to be able to develop a common and well established strategy in dealing with pain in patients undergoing emergency medical care. The hypothesis and the clear explanation of the methods and the subsequent results are good and therefore the study is interesting and provides data on the preferences of the physicians depending on their gender, and compares them to surgeons preferences.

ANSWER: Thank you very much for your assessment.

On the other hand, there are limitations of the study, 1- retrospective data, 2- there is no questionnaire that was performed by the physician, 3- the level of pain, 4- was the pain controlled by the medication the data is not complete there is a numerical pain scale information but it is not very clear what was the result of the pain relief 5- the side effects were not clear, However; these are mentioned in the limitations paragraph. I think the limitations paragraph can be more precise and the limitations can be explained one by one.

ANSWER: We have revised the limitation section and incorporated the additional limitations as suggested by the reviewer.

Overall, these issues are discussed in the discussion section in several paragraphs appropriately, and another section can be placed regarding side effects of opioids and the reasons that may cause oligoanalgesia, such as fear of respiratory depression needs to be discussed in a small paragraph, as well as other specific side effects of opioids.

ANSWER: We have added a paragraph as requested.

Sujoy Banik, MBBS, MD, DM (Reviewer 3): I thank the editorial team for the opportunity to review the work done by the authors and I commend the authors on their excellent work. Pain management is always an issue at every level, and prehospital management of pain has its own challenges, significantly the monitoring available, the personnel who can do and interpret monitoring effectively, and multi-factorial causes of pain, along with the treatment of the actual complaint for which care was administered.

I’m surprised to see a slightly older population of emergency physicians, mean age 41, my experience in a developing country was that emergency physicians are usually younger (mean age 25-30), and the job is usually treated as a stop-gap before actual residency/postgraduation. This should mean that the physicians managing prehospital care in Germany should be relatively experienced and able to manage most conditions more effectively. the presence of physicians themselves in EMS is quite commendable.

ANSWER: Thank you for your thorough assessment of our manuscript. Maybe we did not make the issue of age and qualification of the emergency physicians not clear enough. We do not provide personal information such as the physicians’ age due to local regulations. We are allowed to provide their sex, qualification (resident or specialist) and profession (anaesthesiologist or surgeon).

also I wish to note that surgeons are not taught the same way about opioid prescription as anaesthesiologists. was there any data about any other NSAIDs like diclofenac or ketorolac been given?
ANSWER: Thank you for that question. Obviously, we have inadequately highlighted that this information is given in the „Additional file 4“ (electronic supplement). The table provides data of all pain medication available in our prehospital system, namely ketamine, butylscopolamine (although not a real pain medication often administered for abdominal cramps), acetaminophen and metamizole. There is no significant difference between professions in use of these pain medications which is presented in the “Pain medication use” section of the results. To better highlight that this is included in the Additional File 4, we have changed the legend.

In my experience surgeons tend to be quite familiar with those medications than opioids. Also is there any data about the actual pain experienced in terms of actual scores? Just the mere fact of documentation and treatment does not qualify as proper treatment. Were the NRS scores lower after the administration? Also, a lot of patients don’t have their end GCS scores present (48%). I would think that would have to be essential to handover to the treating team. Is there any data about respiratory rate? That would have been documented hopefully, but has not been commented on in the study. Did the heart rates or BP go down after pain relief drug administration?

ANSWER: The respiratory rate is typically not documented, since it is not measured by the monitoring system. Below you will find some descriptive data as requested. However, as stated in the limitation section the documentation quality is insufficient to provide unbiased results, although comparable with other studies. Accordingly, we refrain to provide the data and any test of differences in the manuscript. That would be scientifically inappropriate and could lead to biased interpretation of the data.

HR initial: All: 86.5 [75-100] - Anaesthesiologists: 87 [75-100] - Surgeons: 86 [74.25-100]  

Also, I would like to understand the effect of female physicians. Did they order more or less opioid, and did that factor as surgeons/anaesthesiologists?

ANSWER: We have included both factors speciality (surgeon/anaesthesiologist) and physician sex in the multivariate analysis. Females administer independent of their specialisation significantly more often opioids (OR 1.4) than male physicians.

With the amount of documentation non-compliance, i’m not sure what meaningful data interpretation can be factored in to improve outcomes at all levels. What were the factors for non-compliance?

ANSWER: This study did not assess patients outcome. It is hypothesis generating (since retrospective) regarding opioids use in the preclinical setting by different specialisations. In our point of view that has several implications – independent of any clinical outcome measurement:

- We should prospectively collect data from several centres to assess if the problem is generalizable.

- Although rules for documentation in Germany exist and the provided document asks for vital signs and pain score, it is inadequately documented. As the reviewer suggested, a structured handover might be one idea to change practice. Other options might be change in reimbursement or electronic documentation with mandatory fields.
Do we appropriately train prehospital physicians how to use opioids, especially if not anaesthesiologists? Do we have to organize different lectures for surgeons (to learn about pain medication) and anaesthesiologists (e.g. chest tubes, not so commonly placed by them)? for example would a handover sheet mandatorily filled out improve this compliance? again increasing paperwork usually decreases actual care. thats just one suggestion from my side though.

We have included your suggestion and added the following sentence to the Discussion section:

ANSWER: A mandatory handover sheet might be an option or electronic documentation might improve documentation and quality control in the future [26]. Maybe the application of mandatory fields will be useful, because incomplete documentation was associated with increased mortality [27].