The Title of Your Study Here

Add a Subtitle if Needed

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Introduction

Trauma, defined as the clinical entity composed of both physcial injury and the body's associated response, is a global health problem that caused 13% of all Disease Adjusted Life Years (DALY) lost and 8% of the deaths globally in 2017 [1]. Mock et al. calculated that 90% of all deaths due to trauma were in low and middle income cuntries with much higher mortality rates compared to high income countries and that an improvement in trauma care globally to that level of high income countries could save almost two million lives annually. [2].

One of the possible complications of trauma is sepsis and septic shock. The main causes for sepsis is infection and non communicable diseases but around four percent is caused by trauma. [3] Sepsis is defined as the sequential organ failure assessment score (SOFA score) of 2 points or more and septic shock a subset of sepsis where the patient is in need of vasopressor treatment or have a serum lactate level over 2mmol/L after adequate fluid treatment. In settings where laboratory analysises can not be performed rapidly qSOFA has been developed constituting of three parts: respiratory rate of 22/min or greater, reduced Glascow coma scale (GCS) or systolic blood preassure of 100 mmHg or less. A score of more than two correlates with higher disease severity and lower survival. [4–6]

The SOFA and qSOFA scores have been studied and evaluated before and after the Sepsis-3 consensus definition 2016 but mainly in the context of infectious and non communicable diseases and in high resource settings.

But it has not yet been sufficiently studied if qSOFA is a good predictor of admission to the ICU in trauma patients admitted to hospitals in low resource settings. In that case qSOFA could be used to direct the resourses and care to the most critically ill patients and thus save lives in low income cuntries.

I know what i want to say but not how to say it. That most of the studies, at least that i can find, on SOFA and qSOFA focus on the infectious part and are performed in high resource settings. I have been able to find some trauma oriented papers but then all beeing focused in high resource settings. But it seem nonsensical to refrence papers about things that i'm not interested about in this paper and i cant really refrence a lack of papers in a particular area either?

The aim of this paper is to asses the validity of qSOFA in predicting ICU admission in trauma patients admitted to hospitals in low sesource settings.

Methods

Source of data

For this paper a retrospective analysis of the observational Towards Improved Trauma Care Outcomes in India (TITCO) cohort was performed[**???**] . The data for TITCO was collected during july 2013 to december 2015 and contains patients admitted to four public university hospitals. The hospitals included were; Jai Prakash Narayan Apex Trauma Center (JPNATC), connected to the All India Institute of Medical Sciences in

New Delhi, a large centre soley dedicated to trauma care; King Edward Memorial hospital (KEM) in Mumbai, a tertiary level hospital but without dedicated truma wards; Lokmanya Tilak Municipal General Hospital (LTMGH) in Mumbai, a tertiary lever public university hospital with a smaller dedicated truma ward; and Seth Sukhlal Karnani Memorial Hospital (SSKM) in Kolkata, connected to The Institute of Post-Graduate Medical Education and Research, a tertiary level public university hospital without a ward dedicated soley to trauma.

Participants

The TITCO cohort include patients with a history of trauma who either got admitted to one of the participating hospitals or who died between arrival and admission. Patients with isolated injurys to limbs and that therefore were treated by orthopaedics and not within the general trauma care were excluded from the database alwell as patients who were dead on arrival. **Do i have any further exclussion criteria? age? type of injury?**

Outcome

The primary outcome of interest was admission to the ICU during hospitalization. **Any secondary outcomes?**

Predictors

For each patient included in the study the qSOFA score was calculated using data recorded on arrival to the hospital. The calculation of the qSOFA score includes a respiratory rate above 22, GCS below 15 and a systolic blood pressure below 100 where one point is awarded for meeting each of the specified criterias and thus yields a score of 0 to 3.

Sample size

We included all eligible patients in the TITCO cohort.

Missing data

We used R for all statistical analysis [RStudio]. We describe the sample characteristics using counts and percentages for qualitative variables and medians and interquartile ranges (IQR) for quantitative variables. The study sample was randomly split into training, validation, and test samples with 60%, 20%, and 20% of the observations in each sample respectively. We used the training sample to update qSOFA by reestimating the coefficients of the original predictors using logistic regression. We used the validation sample to identify optimal cutoffs - those who maximised the Youden index - for the original and updated qSOFA. We used the test sample to assess and compare the performance of the two models. Bootstrapping was used to estimate 95% confidence intervals associated with point estimates.

Från PPF "This will be a retrospective analysis of a cohort of trauma patients admitted to four public university hospitals in urban India between 2013 and 2015. The complete cohort includes 16 000 patients. The primary outcome will be ICU admission. The predictors included in qSOFA are respiratory rate, Glasgow coma scale, and systolic blood pressure. Validity will be assessed in terms of predictive performance, which in turn will be measures as discrimination and calibration. Calibration will further be visualised using calibration plots. An optimal cutoff will be identified using the Youden index and sensitivity, specificity, precision, recall, positive and negative predictive values will assessed at this cutoff. The original model will finally be compared to a updated model, using the same predictive performance measures. Updating will be performed using logistic regression. Missing data will be handled using multiple imputation."

Results

The TITCO cohort included 1000 patients, from which 104 where excluded for being under the age of 18 leaving 896. Furthermore 5686 patients where excluded due to missing and non recorded data: admission to the ICU: 35 Systolic BP: 2193 RR: 5102 GCS: 1542 Leaving 6941 datapoints to be used in the analysis.

	Median(min-max)
Sex ration f:m	1171:5770
Age	35(18-90+)
ICU admission(%)	42.4
died(%)	22.3
SBP	120(0-254)
RR	18(0-48)
GCS	15(3-15)

But I have no idea how to get that to auto-generate using code in markdown. does it even work on github or do you need to download it? And i dont wanna write to much explanatory text now having to redo it using the correct syntax.

1. DALYs G2, Collaborators. H. Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392:1859–922.

2. Mock C A-RC Joshipura M. An estimate of the number of lives that could be saved through improvements in trauma care globally. World J Surg. 2012;36:959–63.

3. Rudd KE AK Johnson SC. Global, regional, and national sepsis incidence and mortality, 1990-2017: analysis for the Global Burden of Disease Study. Lancet. 2020;395:200–11.

4. Singer M SC Deutschman CS. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315:801–10.

5. Shankar-Hari M LM Phillips GS. Developing a New Definition and Assessing New Clinical Criteria for Septic Shock: For the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315:775–87.

6. Seymour CW IT Liu VX. Assessment of Clinical Criteria for Sepsis: For the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315:762–74.