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Review Stage at time of this submission: The review has not yet started.

Conflicts of interest:
None.

Effect of team simulation training on clinical outcome of trauma patients: A systematic review

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Review question / Objective: To evaluate the effect of simulation-based team training in trauma patient emergencies.

Condition being studied: Changes in trauma mechanisms and injury characteristics have brought great challenges to trauma treatment. Poor communication, human error and process management barriers have brought huge hidden dangers to trauma treatment.

Information sources: We will search the electronic databases and trial records listed below. We will restrict the date from 2000 and set the language restriction to English. 1. PubMed (2000 to present). 2. Embase (2000 to present; Ovid). 3. The Cochrane Central Register of Controlled Trials (CENTRAL). 4. Cochrane System Review Database (CDSR; current release; part of the Cochrane library). 5. Science Network (2000-present) 6. CNKI (2000 to present) 7. Wanfang (2000 to present) Search other resources: We will review the bibliography including research and related reviews to identify any other related publications.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 August 2020 and was last updated on 30 August 2020 (registration number INPLASY202080123).

INTRODUCTION

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METHODS

Participant or population: Trauma emergency rescue team: Inclusion criteria: We define a team as two or more team members to achieve a common goal together. We include all teams with qualified healthcare providers. The obstetrics team is a multi-professional team. We accept team members (for example, medical staff from obstetrics, obstetrics and gynecology, anesthesiology, pediatrics, midwives, and nurses. These teams must deal with emergencies, which are defined as time-critical and high-risk And high risk. Equity situation. Exclusion criteria: Unqualified healthcare providers (for example, medical students, student nurses). Research conducted in low-income countries or developing countries.

Intervention: Simulation-based trauma team training. Inclusion criteria: Use of simulation in education of the team in the management of trauma emergencies. Exclusion criteria: Simulation in virtual reality Simulation games on computer Skills training for an individual provider.

Comparator: Non-exposed to the training intervention or before and after Inclusion criteria: Either a group non-exposed to training or a group that receive a different educational intervention (e.g. lectures). The population can also be its own comparator in before- and after-studies. Exclusion: No comparator group.

Study designs to be included: Eligible for inclusion are randomized controlled trials (RCTs) and non-randomized studies (non-randomized controlled trials), interrupted time series, controlled before-and-after studies and cohort studies).

Eligibility criteria: Selection of studies: The first and the last author will independently assess all studies for inclusion based in our protocol. Any disagreement that cannot be resolved by discussion, a third person will be consulted . Researchers involved in extracting data: GLL + ZR will conduct the search and identify the records through

database searching. GLL + ZR remove duplicates by reference program. GLL + ZR provide the list of studies after the first screen GLL + ZR assess all full-text articles GLL + ZR extract the data and code Data extracted: 1. Author, year 2. Intervention characteristics (e.g. type of intervention, duration of training and debrief) 3. Comparison characteristics 4. Study characteristics (e.g. design, participants) 5. Outcome data (e.g. detail on all primary and secondary outcome).

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Main outcome(s): Clinical outcome: Mortality of trauma patients (e.g. mortality rate, admission days). Team performance: The team's performance assessed by a rating scales or other tests. (e.g. scales for teamwork, technical skills, process performance, time elapsed to perform skills).

Additional outcome(s): None.

Quality assessment / Risk of bias analysis: GLL and ZR will independently assess the risk of bias within the category: "Low risk of bias", "Unclear" "High risk of bias". The handbook of MERSQI will be used to assess the quality of the studies independently by to reviewers. 1. Selection bias: Low risk of bias: The inclusion of participants is clearly described and representative of the population. 2. Performance bias Low risk of bias: The majority of healthcare providers is included in the study. High risk: Only a small part of

the teams agrees to the intervention. 3. Measurement bias Low risk of bias: A validated tool, checklist or protocol and standard patient outcomes are used.

Strategy of data synthesis: Where interventions are similar we plan to synthesize results in a meta-analysis. However, we expect the populations and outcomes to differ so a meta-analysis cannot be conducted due to heterogeneity. However, we will provide a narrative and descriptive synthesis instead. We will provide: 1. Prisma flow of inclusion of records. 2. A list of all outcomes (Kirkpatrick's level 1-4) 3. Table with studies, participants, setting, intervention, outcome and their risk of bias. 5. Summary of evidence using Oxford Levels of Evidence.

Subgroup analysis: Yes according to Kirkpatrick's level 1-4.

Sensibility analysis: Yes according to Kirkpatrick's level 1-4.

Language: English.

Country(ies) involved: China.

Keywords: trauma team, simulation training, trauma patients, quality improvement, systematic review.

Contributions of each author:

Author 1 - Lulu Gu - Author 1 drafted the manuscript.

Author 2 - Kangzhen Zhang - The author provided statistical expertise.

Author 3 - Rui Zhang - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.

Author 4 - Huijun Wang - The author read, provided feedback and approved the final manuscript.

Author 5 - Cui Wu - The author read, provided feedback and approved the final manuscript.

Author 6 - Xianghong Ye - The author read, provided feedback and approved the final manuscript.