**Pediatric Blast Trauma: A Systematic Review and Meta-Analysis of Factors Associated with Mortality and Description of Injury Profiles**

| **Section and Topic** | **Item #** | **Checklist item** | **Location where item is reported** |
| --- | --- | --- | --- |
| **TITLE**  |  |
| Title  | 1 | Identify the report as a systematic review. | 1 |
| **ABSTRACT**  |  |
| Abstract  | 2 | See the PRISMA 2020 for Abstracts checklist. | 2 |
| **INTRODUCTION**  |  |
| Rationale  | 3 | Describe the rationale for the review in the context of existing knowledge. | 4 |
| Objectives  | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | 4-5 |
| **METHODS**  |  |
| Eligibility criteria  | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | 5-6 |
| Information sources  | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | 5 |
| Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | 5 |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | 5-6 |
| Data collection process  | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | 5-7 |
| Data items  | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | 5-7 |
| 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | 5-7 |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | 6 |
| Effect measures  | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | 7-8 |
| Synthesis methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | 6-8 |
| 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | 6 |
| 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | 7-8 |
| 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | 7-8 |
| 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | n/a |
| 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | n/a |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | 6 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | 6 |
| **RESULTS**  |  |
| Study selection  | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | 8 |
| 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | 8 |
| Study characteristics  | 17 | Cite each included study and present its characteristics. | ESI |
| Risk of bias in studies  | 18 | Present assessments of risk of bias for each included study. | ESI |
| Results of individual studies  | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | Fig 1-4 |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | ESI |
| 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | 10-11, Fig 3,4 |
| 20c | Present results of all investigations of possible causes of heterogeneity among study results. | 12-13 |
| 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | n/a |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | n/a |
| Certainty of evidence  | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | ESI |
| **DISCUSSION**  |  |
| Discussion  | 23a | Provide a general interpretation of the results in the context of other evidence. | 12 |
| 23b | Discuss any limitations of the evidence included in the review. | 16 |
| 23c | Discuss any limitations of the review processes used. | 14, 16 |
| 23d | Discuss implications of the results for practice, policy, and future research. | 15-16 |
| **OTHER INFORMATION** |  |
| Registration and protocol | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | n/a |
| 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | n/a |
| 24c | Describe and explain any amendments to information provided at registration or in the protocol. | n/a |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | 1 |
| Competing interests | 26 | Declare any competing interests of review authors. | n/a |
| Availability of data, code and other materials | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | ESI |
| *From:*  Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71For more information, visit: <http://www.prisma-statement.org/>  |

**Supplementary Material, Table S1**. A Copy of the PRISMA Checklist Utilized in This Study.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |   |   | **4.1** | **4.2** | **4.3** | **4.4** | **4.5** | **Overall Rating (max 11/11)** |
| **PMID** | **First Author** | **Year** | **a** | **b** | **c** | **d** | **a** | **b** | **c** | **a** | **a** | **b** | **a** |  |
| 11259737 | Terzić et al. | 2001 |   |   |   |   |   |   |   |   |   |   |   | 8 |
| 14523212 | Aharonson-Daniel et al. | 2003 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 26692453 | Khan I et al. | 2015 |   |   |   |   |   |   |   |   |   |   |   | 7 |
| 27483523 | Bitterman Y et al. | 2016 |   |   |   |   |   |   |   |   |   |   |   | 7 |
| 27530971 | Ashkenazi I et al. | 2016 |   |   |   |   |   |   |   |   |   |   |   | 4 |
| 29055895 | Thompson DC et al. | 2020 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 15798470 | Amir LD et al. | 2005 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 16953022 | Coppola CP et al. | 2006 |   |   |   |   |   |   |   |   |   |   |   | 9 |
| 17208567 | McGuigan R et al. | 2007 |   |   |   |   |   |   |   |   |   |   |   | 10 |
| 18977963 | Matos RI et al. | 2008 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 19820583 | Creamer KM et al. | 2009 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 19838104 | Jaffe DH et al. | 2010 |   |   |   |   |   |   |   |   |   |   |   | 9 |
| 23117384 | Edwards MJ et al. | 2012 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 22524930 | Arul GS et al. | 2012 |   |   |   |   |   |   |   |   |   |   |   | 10 |
| 24553560 | Edwards MJ et al. | 2013 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 24650471 | Villamaria CY et al. | 2014 |   |   |   |   |   |   |   |   |   |   |   | 7 |
| 26116000 | Hillman CM et al. | 2014 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 24307254 | Inwald DP et al. | 2014 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 26165650 | Çelikel A et al. | 2015 |   |   |   |   |   |   |   |   |   |   |   | 6 |
| 27771222 | Erhan E et al. | 2017 |   |   |   |   |   |   |   |   |   |   |   | 6 |
| 29908849 | El Chehab H et al. | 2018 |   |   |   |   |   |   |   |   |   |   |   | 8 |
| 31739348 | Çelikkaya ME et al. | 2020 |   |   |   |   |   |   |   |   |   |   |   | 4 |
| 30902455 | Naaman O et al. | 2020 |   |   |   |   |   |   |   |   |   |   |   | 6 |
| 31676974 | Bäckström F et al. | 2020 |   |   |   |   |   |   |   |   |   |   |   | 2 |
| 33308824 | Marenco CW et al. | 2021 |   |   |   |   |   |   |   |   |   |   |   | 9 |
| 24099375 | Bagri N et al. | 2013 |   |   |   |   |   |   |   |   |   |   |   | 8 |
| 15019123 | Vassilia K et al. | 2004 |   |   |   |   |   |   |   |   |   |   |   | 8 |
| 10923857 | CDC | 2000 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 16818578 | Witsaman RJ et al. | 2006 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 27550873 | Billock RM et al. | 2016 |   |   |   |   |   |   |   |   |   |   |   | 8 |
| 27679958 | Myers J et al. | 2016 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 16882957 | Bilukha OO et al. | 2006 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 18711835 | Bilukha OO et al. | 2007 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 19782317 | Can M et al. | 2009 |   |   |   |   |   |   |   |   |   |   |   | 8 |
| 21296800 | Bilukha OO et al. | 2011 |   |   |   |   |   |   |   |   |   |   |   | 6 |
| 19557963 | Bilukha OO et al. | 2008 |   |   |   |   |   |   |   |   |   |   |   | 9 |
| 26374671 | Mousavi B et al. | 2015 |   |   |   |   |   |   |   |   |   |   |   | 11 |
| 12902369 | Bilukha OO et al. | 2003 |   |   |   |   |   |   |   |   |   |   |   | 11 |

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| --- | --- |
| **4.1: Is the sampling strategy relevant to address the research question?** |  |
| 1. Sampling procedures target a pediatric population with blast injuries for the purpose of developing an injury profile.
 |
| 1. Samples are obtained inclusively from a state department, national, or medical registry, or other systematically organized database.
 |
| 1. Study sample is taken in total from the registry or database with minimal exclusions.
 |
| 1. Sampling procedures focused on an injury mechanism that can be exclusively stratified as either terrorism bombing, landmine, firework, natural gas explosion, or vulcanizing without overlap in reported injury profiles.
 |
| **4.2: Is the sample representative of the target population?** |  |  |
| 1. The study describes a pediatric population with a unique injury profile stratified by body region.
 |
| 1. Study population can be stratified as GWOT vs non GWOT.
 |  |
| 1. The study is not a case study that limits generalizability to the target population as a whole.
 |
| **4.3: Are the measures appropriate?** |  |  |  |  |
| 1. The study does not gather and organize demographic information from a non self-reporting or survey-based platform.
 |
| **4.4: Is the risk of nonresponse bias appropriate?** |  |  |  |
| 1. Sample exclusions were only the result of poor demographic information accessibility or participants aged outside of the pediatric parameter of <18 y/o.
 |
| 1. Excluded participants represent <10% of the total initial study sample.
 |
| **4.5: Is the statistical analysis appropriate to answer the research question?** |  |
| 1. There are no major complications with incidental or insignificant findings.
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**Supplementary Material, Table S2.** Data Quality, as Measured Through an 11-Point Modified MMAT Grading Tool.

Articles fully meeting a given listed quality metrics are shaded in green. Articles in which not meeting the quality metric cannot be ruled out are listed in black. Articles definitively not meeting the quality metric are shaded in red. For each given article, quality metrics shaded in green were assigned a grade of “+1”, quality metrics shaded in black were assigned a grade of “0”, and quality metrics shaded in red were assigned a grade of “-1”. The quality metric grades were then summated for each article and reported as the overall rating in the right-hand-most column.