

Appendix 1. Search strategy

("emergency service, hospital"[MeSH Terms] OR ("emergency"[All Fields] AND "service"[All Fields] AND "hospital"[All Fields]) OR "hospital emergency service"[All Fields] OR ("emergency"[All Fields] AND "department"[All Fields]) OR "emergency department"[All Fields] AND ("magnesium"[MeSH Terms] OR "magnesium"[All Fields] OR "magnesium s"[All Fields] OR "magnesiums"[All Fields]) AND (("atrialisation"[All Fields] OR "atrialization"[All Fields] OR "atrialized"[All Fields] OR "atrially"[All Fields] OR "heart atria"[MeSH Terms] OR ("heart"[All Fields] AND "atria"[All Fields]) OR "heart atria"[All Fields] OR "atrial"[All Fields]) AND ("fibril"[All Fields] OR "fibril s"[All Fields] OR "fibrillation"[All Fields] OR "fibrilization"[All Fields] OR "fibrillized"[All Fields] OR "fibrillate"[All Fields] OR "fibrillated"[All Fields] OR "fibrillates"[All Fields] OR "fibrillating"[All Fields] OR "fibrillation"[All Fields] OR "fibrillations"[All Fields] OR "fibrillization"[All Fields] OR "fibrillize"[All Fields] OR "fibrillized"[All Fields] OR "fibrillizes"[All Fields] OR "fibrillizing"[All Fields] OR "fibrillous"[All Fields] OR "fibrills"[All Fields] OR "fibrils"[All Fields]))

Translations

Emergency Department: "emergency service, hospital"[MeSH Terms] OR ("emergency"[All Fields] AND "service"[All Fields] AND "hospital"[All Fields]) OR "hospital emergency service"[All Fields] OR ("emergency"[All Fields] AND "department"[All Fields]) OR "emergency department"[All Fields]




Magnesium: "magnesium"[MeSH Terms] OR "magnesium"[All Fields] OR "magnesium's"[All Fields] OR "magnesiums"[All Fields]

Atrial: "atrialisation"[All Fields] OR "atrialization"[All Fields] OR "atrialized"[All Fields] OR "atrially"[All Fields] OR "heart atria"[MeSH Terms] OR ("heart"[All Fields] AND "atria"[All Fields]) OR "heart atria"[All Fields] OR "atrial"[All Fields]

fibrillation: "fibril"[All Fields] OR "fibril's"[All Fields] OR "fibrillation"[All Fields] OR "fibrilization"[All Fields] OR "fibrillized"[All Fields] OR "fibrillate"[All Fields] OR "fibrillated"[All Fields] OR "fibrillates"[All Fields] OR "fibrillating"[All Fields] OR "fibrillation"[All Fields] OR "fibrillations"[All Fields] OR "fibrillization"[All Fields] OR "fibrillize"[All Fields] OR "fibrillized"[All Fields] OR "fibrillizes"[All Fields] OR "fibrillizing"[All Fields] OR "fibrillous"[All Fields] OR "fibrills"[All Fields] OR "fibrils"[All Fields]

Appendix 2. Risk of bias for randomized controlled trials

Authors	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Zaouchi 2021	+	+	+	+	+	+
Bouida 2019	+	+	+	+	+	+
Chu 2009	+	+	+	+	+	+
Davey 2005	+	+	+	+	+	+
Hayes 1994	?	?	+	+	+	!

 Low risk
 Some concerns
 High risk

Appendix 3.

Data Collection process

All data were collected into a standardized excel spreadsheet (Microsoft, Washington, USA). Data extractions were performed by multiple authors. Two authors (MP, CP) collected the data then the outcome data was double-checked again by another investigator (QKT). The discrepancies of data extraction were resolved by consensus between investigators. We collected study characteristics such as year of publication, studies' first authors, sample size, age, percentage of females, any types of anti-arrhythmic treatment for control or Magnesium groups. We also collected other clinical factors such as mean and standard deviation of dose of initial magnesium bolus, total magnesium dosage in grams. Similarly, heart rate before magnesium treatment and after treatment at first assessment time as reported by the authors were also collected. We also collected the number of patients whose cardiac rhythm was converted to sinus rhythm and the number of patients who experienced any complications at first assessment by the authors.