Cardiopulmonary resuscitation education in the Russian Federation: a systematic analysis of the scientific evidence

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Purpose of the study: To identify, summarize and appraise cumulative published scientific evidence on education in cardiopulmonary resuscitation (CPR) in Russia.

Materials and methods: Medline, Scopus, Science Direct and Russian Science Citation Index databases were searched (December 1991–December 2016) for **studies relevant to resuscitation training or investigating existing CPR knowledge/skills, that were executed by Russian researchers or examined the topic of interest for Russia/Russian population**. CPR and cardiac arrest search terms were combined with Boolean “OR”, and the resulting set of terms was then combined with country/language terms “Russia” or “Russian” with Boolean “AND”. Additionally, contents of relevant Russian journals, bibliographies of eligible papers and Google Scholar were searched. There was no limitation based on publication language or study design. Review articles, expert opinion, commentary, correspondence and editorials were excluded.

For all eligible studies, the following information was extracted and tabulated by one reviewer and then checked by second reviewer: authors, publication year, publication type, language, study type, aim and objectives, population, number of participants, educational intervention, study methods and measures, main findings, and quality of the study. The methodological quality of eligible articles was assessed independently by two reviewers using the Mixed Methods Appraisal Tool (MMAT) – Version 2011.

Figure 1. Distribution of the publications per year.

Results: Initial search yielded 7964 unique citations. The majority of these (7906) were excluded during the process of relevance screening. Fifty eight were considered as relevant based on the title, abstract, key words and/or author affiliation. After reviewing the full papers, 37 were excluded. One additional study was identified through a hand search of reference lists of potentially eligible articles.

Consequently, **22 studies were included in the final analysis:** 11 full-text articles, 10 conference abstracts and 1 dissertation. The majority (91%) were published in Russian. Distribution of the publications over the 25-year period is shown in Fig. 1.

Methodologically, the **most common types of studies were quantitative non-randomized (45%) and quantitative descriptive (36%). Only three studies (14%) were randomized controlled.** None of the publications describing the randomized studies provided any details on the randomization procedure, allocation concealment or blinding.

Healthcare professionals and medical students were the most commonly investigated population clusters (63% and 20% of study populations, respectively), whereas **non-medical individuals constituted 17% of the studied populations.** Sample size ranged from 26 to 2000 participants, and was not reported in 4 studies.

Most studies (64%) investigated effects of various CPR educational interventions, 23% – were assessing existing CPR knowledge or skills. The studies show **high heterogeneity of the methodological approaches, structure and duration of educational interventions, evaluation methods and criteria being used.**

The studies were **mostly of poor methodological quality** (Fig. 2). More than **40% of the publications have not passed the quality screening**, particularly due to the absence of clear research questions or study objectives defined, or since the collected data do not allow to address the research questions.

Figure 2. Percentage distribution of the studies by methodological quality.

The overall quality was categorised as low or moderate low for 50% of the studies. **Only 2 of 22 eligible studies (9%) met the criteria of moderate high quality** (Fig. 2).

Methodological limitations were most commonly related to the study sample recruitment (no explanation for inclusion and exclusion criteria, no sample size justification, questionable representativeness of the sample for the population under study) and the applicability of the evaluation criteria/measurements utilized (criteria/measurements are not clearly defined or inappropriate for answering the research question).

Conclusions: Low number, significant heterogeneity and poor quality of the existing studies, alongside with limited population coverage, are suggesting more scientific and administrative regard should be given to CPR education in the Russian Federation.