TEMPLATE QUANTITATIVE EVIDENCE REVIEW Education Working Group

Question (PICO)	In **laypeople** following first aid programs (population), which **learning modalities** (intervention) compared to another learning modality or no training (comparison) will impact **patient, learner and/or societal outcomes** (outcome)? Example for topic-specific PICO In ***children*** following first aid programs (population), does ***online learning*** (intervention) compared to another learning modality or no training (comparison) ***impact patient, learner and/or societal outcomes*** (outcome)?
Please write your topic PICO here	
Search Strategy	Provided in master template – no need to add anything
Search date	November 2018
In/Exclusion criteria	Provided in master template – no need to add anything

Initial decision to include or not in PICO

Author, title	Summary of the paper	How does this paper answer the PICO?	Include or exclude

Characteristics of included studies – complete one row for each study to be included

Author, publication year, Country	Study design	Population	Intervention and control	Remarks
Ref 1	*Randomised trial* *Non-randomised trial* *Observational study* *Case study or report* *Other*	*Description of the used population: number of original selected individuals, gender, age, number of individuals receiving the intervention, number of individuals in control group, nationality (when different from the country listed in the first column)*	*Describe the intervention and control.* ***For educational studies*** *please check the relevant answer:* Educational materials used for the learning are well described: ○ It is clear what materials /props were used and why ○ Materials are mentioned but not fully explained ○ No materials are mentioned, or they are not described • Incentives: ○ Any incentives provided for participants are explicit and are clearly unconnected to the learning outcomes ○ Incentives are explicit, but there is lack of clarity over any influence they might have on leaner outcomes ○ There is an implication that incentives affect the study outcomes, e.g. by encouraging a bias response • Instructor/facilitator information: ○ Information about selection of instructors for the study demonstrates lack of bias ○ Instructors are chosen for convenience, but there is some level of randomisation or blinding ○ Instructors have specific skills which might limit generalizability the study outcomes • Schedule and attendance: ○ Schedule and attendance is consistent and clear ○ Schedule and attendance is inconsistent, but reported ○ Schedule and attendance are inconsistent and unclear, thus introducing potential bias	

Synthesis of findings

Author	Outcomes	Comparison	Effect Size	Number of participants
	Patient: *e.g. survival, reduced pain, reduced injury* ***Learner:*** *e.g skills, knowledge, retention, confidence, willingness* ***Societal:*** *e.g. resilience, empowerment, peer support*	*What was the intervention and what was the control? E.g. Blended learning (intervention) vs Classroom learning (control)*	Mean 1±SD1 (intervention) vs mean 2±SD2 (control) MD: XXX, 95%CI [XXX;XXX] P: XXX MD: mean difference, RR: risk ratio, OR: odds ratio, SD: standard deviation Eg. 66.1±9.7 vs 42.4±5.0 MD: 23.70, 95%CI [17.55;29.85] p<0.00001 *Could be narrative if not all data are provided*	Number of participants in intervention group vs number in control group

Quality of evidence

1. INDIVIDUAL STUDIES

Items to consider for experimental studies:

Author, Year	**Random sequence generation**	**Blinding**	**Completeness of accounting**	**Selective outcome reporting**	**Other limitations**
Explanation	*Was there random sequence generation? Was there any allocation For example, did were learners allocated randomly to cohorts or was this done by convenience (such as date availability)?*	*Blinding is the process of preventing those involved in a trial from knowing to which comparison group a particular participant belongs. Learners, educators, outcome assessors, and analysts are all candidates for being blinded.*	*During the course of the study and follow-up period was a record kept of learners dropping out of the study, and was this broadly similar for control and intervention groups?.*	*Reporting of some outcomes and not others on the basis of the results.*	*E.g.* • *stopping early for benefit observed in randomized trials, in particular in the absence of adequate stopping rules* • *use of unvalidated outcomes* • *Variability – e.g. use of different educators with different training styles* • *recruitment bias*
How to respond	Please be explicit: **Yes** there was randomisation or **No** there was not randomisation or **Unclear** Allocation concealment: yes/no/unclear/ not applicable (if not randomized)	Please be explicit: **Yes** there was blinding or **No** there was no blinding or **unclear** **Participants:** yes/no/ unclear **Educators:** yes/no/ unclear **Researchers:** yes/no/ unclear	yes/no/unclear	yes/no/unclear	Include any limitations that you think make the results more questionable, or which weaken the overall rigour of the study.

Items to consider for observational studies:

Author, Year	**Appropriate eligibility criteria**	**Appropriate methods for exposure and outcome variables**	**Controlled for confounding**	**Complete ad adequate follow-up**	**Other limitations**
Explanation	Is the selection of people in the 'exposure' group a true reflection of the population that was exposed? Consider here how people were selected for each cohort.	Differences in measurement of exposure and outcome variables: was everyone in the exposure cohort exposed to the same level?	Confounding is not taken into account at the design (e.g. matching) or analysis level (e.g. adjustment, by using stratification or regression)	Especially within prospective cohort studies, both groups should be followed for the same amount of time.	
How to respond	**Yes** it was appropriate Or **no**, not appropriate, or **unclea**r	yes/no/unclear	yes/no/unclear	yes/no/unclear	*Indicate in every box why you chose yes, no or unclear*

2. BODY OF EVIDENCE (= all studies answering your PICO)

Initial grading: **High for randomised experimental studies;** **Medium for non-randomised experimental studies** **Low for observational studies** **Very low for case studies/reports**	Tick one: ○ **High** ○ **Medium** ○ **Low** ○ **Very low**	Here we are looking at your collection of studies. First, provide an initial grading for the group as a whole. For example, if they are mostly non-randomised experimental studies, tick 'medium'.
Limitations in study design	0/-1	*See table above with quality of evidence for the individual studies: if the majority of the individual studies has study limitations, the level of evidence should be downgraded by marking' -1'. If not, mark 0*
Imprecision	0/-1	*Results are imprecise when studies include relatively few patients and few events and thus have wide confidence intervals around the estimate of the effect. See below for more detailed explanation on how to estimate imprecision; in case no pooled value (meta-analysis) is available, imprecision can be judged for every individual study – if there is imprecision for the majority of the studies, the level of evidence should be downgraded by marking' -1'. If not, mark 0*
Inconsistency	0/-1	*Significant results in favour of the intervention and significant results in favour of the control; significant and non-significant results (if there is no imprecision; otherwise the non-significant results are just "no evidence of effect" instead of "evidence of no effect")*
Indirectness	0/-1	*Evidence could be indirect evidence if the population, intervention or outcome in the studies is not exactly the same as in the PICO (e.g. evidence is on adults, but the PICO specified children as the population)*
Publication bias	0/-1	***Can only be judged when 10 studies or more**, by using a funnel plot: see detailed explanation below*
QUALITY (GRADE)	**Final grading: high, moderate, low or very low, depending on the number of downgrades**	

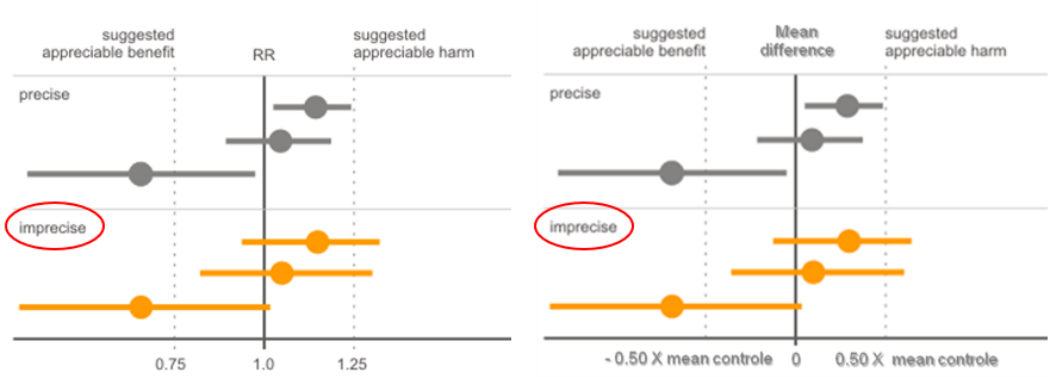
Conclusion	*List either narrative conclusions or pooled values of meta-analyses in a fixed format, including the level of evidence (quality/certainty of the evidence); examples:* • *Statistically significant high/moderate quality evidence*: There is evidence in favour of <intervention or comparison>. It was shown that <intervention> resulted in a statistically significant increase/decrease of <outcome>, compared to <comparison> (<Author> <year>). Evidence is of high/moderate quality. • *Statistically significant low/very low quality evidence*: There is limited evidence in favour of [intervention]. It was shown that <intervention> resulted in a statistically significant increase/decrease of <outcome>, compared to <comparison> (<Author> <year>). Evidence is of low/very low quality. • *Non-statistically significant evidence*: There is (limited) evidence neither in favour of the intervention nor the control. *In case of imprecision*: A statistically significant increase/decrease of <outcome>, using <intervention> compared to <comparison>, could not be demonstrated (<Author> <year>). *In case no imprecision is present*: It was shown that <intervention> did not result in a statistically significant difference of <outcome>, compared to <comparison> (<Author> <year>).
Write your conclusion here:	
Items relevant for interpretation of the evidence	***If available, add any items that could be interesting for going from evidence to recommendations (benefits, harms, costs), or for the "implementation considerations"*** ***For educational studies:*** *please check the appropriate answer for the following items:* • The paper is explicit about cost or potential cost of implementation, either to the learner or the provider: ○ Costs are explicit and discussed in a transparent way ○ Costs are explicit but not discussed ○ Costs are not included in data provided or it is not clear what costs would be incurred • The paper discusses scalability of the approach and/or extrapolation to other contexts: ○ Options and issues for evolution are discussed and further research needed ○ Some discussion of next steps to evolve the work already done ○ Little or no indication of next steps incurred • The paper gives indications of cultural, environmental, behavioural or legal considerations: ○ Cultural, environmental, behavioural or legal aspects are discussed and contextualized ○ Cultural, environmental, behavioural or legal aspects are mentioned ○ Cultural, environmental, behavioural or legal aspects are ignored • Please indicate here any specific cultural, environmental, behavioural or legal aspects which could be explored further for the implementation recommendations for the Guidelines

Reference(s)	*Use consistent reference style and list citation for all studies included*

More explanation on "imprecision":

- Results are imprecise if:
  1. The study is too small:
     - ✓ Continuous outcomes: number of participants is too low (rule of thumb: 400)
     - ✓ Dichotomous outcomes: number of events is too low (i.e. number of participants with a positive outcome, e.g. number of deaths) (rule of thumb: 300)

OR 2. The confidence interval (CI) is too wide: experts should indicate what is "too wide" – rules of thumb:
  - ✓ Continuous outcomes (MD): the CI contains 0 half of the mean of the control group
  - ✓ Dichotomous outcomes (RR/OR): the CI contains 1 and 1,25 or 1 and 0,75



More explanation on "publication bias" and using funnel plots:

•A funnel plot is a plot of each trial's effect size against some measure of its size, such as the precision, the overall sample size, or the standard error (top).

•These plots are referred to as funnel plots because they should be shaped like a funnel if no publication bias is present. This shape is expected because trials of smaller size (which are more numerous) have increasingly large variation in the estimates of their effect size as random variation becomes increasingly influential.

•However, since smaller or nonsignificant studies are less likely to be published, trials in the bottom left hand corner (when a desirable outcome is being considered) of the plot are often omitted, creating a degree of asymmetry in the funnel (bottom).

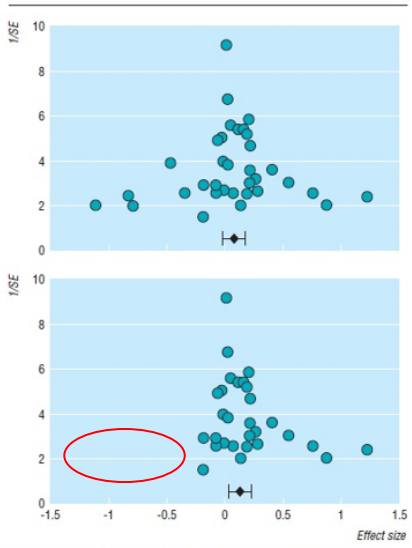


Fig 1 Typical funnel plot generated from 35 simulated studies (top) and same data with five missing studies showing a typical manifestation of publication bias (bottom)