## Exercise 7.1 Study selection

Now revisit your inclusion and exclusion criteria from Chapter 5 and write them down in the grid provided. Keep this grid to hand whilst you go through your study selection process.

|  |
| --- |
| *Tool for focusing your question – PICO, SPICE, etc.* |
| **Inclusion criteria**  Population =  Intervention/exposure =  Comparator =  Outcome (s) =  Context = |

Sample Response

For our earlier (fictitious) systematic review on mobile health interventions for maternal, newborn and child health in low- and middle-income countries we have devised the

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Inclusions** | **Exclusions** |
| **P**opulation | Mothers, their newborns and young children [NB: Define Upper Age Range for children) | • Pregnant women  • Women in antenatal, intranatal and postnatal periods  • Newborns  • Children aged 0–5 years |  |
| **I**ntervention OR Exposure | Mobile health interventions [NB: Brainstorm list of intervention types] | Any intervention, delivered via mobile ICT, which is designed to support the maternal, newborn and child health at national, state, city, or community level in Low- and Middle-Income Countries |  |
| **C**omparison | Usual (traditional) support to mothers and children [NB: Speak with experts to find out what this typically is] | Usual care | Another recent technological intervention |
| **O**utcome(s) | Improved maternal health, Improved child health, Body Mass Index, maternal and infant well-being | **Primary outcomes:** maternal mortality; maternal morbidity; newborn and child mortality; newborn and child morbidity  **Secondary outcomes:** number of planned antenatal and post natal visits; number of unscheduled care visits and emergency care; quality of life; quality of care (delivery by skilled birth attendants, appropriate use of evidence-based medical and obstetric interventions where available); self-efficacy; cost-effectiveness; immunisation cover and child developmental milestones |  |
| **C**ontext | Low- and Middle-Income Countries (LMICs) | Any healthcare setting in an LMIC | • Studies from developed countries |
| **S**tudy types | Empirical comparative studies (randomised controlled trials; cohort studies) |  | • Expert opinion  • Case studies, case series  • Technical reports, reviews |

Now consider your own review, and use Exercise 7.2 to decide the level of quality assessment required.

## Exercise 7.2 Assessing the evidence base for your review

Consider the types of review in Table 7.1 and think about the questions you might want to ask when assessing the evidence base for your review.

|  |
| --- |
| **Insert your response:** |
|  |
| Your review question: |
| * Which key questions do you need to ask for your review? |
| * What is the practical application of your questions? |

## Exercise 7.3 When is an article worth reading?

Before introducing quality assessment in more detail, when you come across a research study in a journal, consider the following:

1. How do you decide whether an article is worth reading?

2. What makes an article believable?

In addressing Exercise 7.3, you can probably divide your factors into three distinct groups:

* *Applicability –* the topic of the study, how important it is to you at the moment, the similar­ity of the setting to the one in which you work, the level at which it is written, the profes­sional group or discipline for whom it is written, etc.
* *Extrinsic factors* – those external factors assumed to relate to, but not always associated with, the quality of the article: who wrote it, where they work, what their job or qualifica­tions are, whether you have heard of them, who paid for the study, in which journal it is published, whether the authors have written on the subject before.
* *Intrinsic factors* – factors that relate to the study itself, i.e. the appropriateness of the study design to the question being asked, the suitability of the sample, the methods used to recruit the sample, the methods used to obtain the results.

## Exercise 7.4 Study scenario

**Can an ICT intervention improve primary schoolchildren’s performance in solving maths problems?**

A group of 20 primary schoolchildren are selected by their teacher to take part in this study as a reward for good behaviour. At the start of the study, each child completes a maths problems test consisting of 10 questions. Each child then completes a one-hour online workbook on the class computer, in which they complete a series of maths problems in the form of fun games and exercises. The children then complete another maths problems test of 10 questions, and the number answered correctly is recorded. The teacher asks each child to recall how many they got correct in the maths test before the study started.

1. *What sources of bias can you see?*

Hint 1: Might the children selected to take part in the study differ in any way from those who did not take part?

Selection bias – well-behaved children Recall bias – can the children accurately recall their pre-study test score? Will the children be truthful about their pre-study test score?! Investigator bias – might the teacher want the outcome of the study to go in a particular direction?

Hint 2: Do you think the children could accurately (and truthfully!) recall their score for the test they took at the beginning of the study?

1. Small sample size Confounding factors: We are told very little about the children that took part and there are likely to be confounding factors that might influence the results, for example consider the following pre-study test score on weekly maths test, parental help with maths homework.

2. *Aside from the sources of bias in this study, what other factors might limit the credibility of the study findings?*

Incentive: ICT intervention is a reward for good behaviour.

## Exercise 7.5 Quality assessment

In Table 7.9, three articles from the *British Medical Journal* (*BMJ*) are presented for you to test out your quality assessment skills. Each of the three articles is accompanied by a commentary from the *Student BMJ*, which summarises the key issues relating to quality.

Although these examples are from the *BMJ*, the selected articles are of different study designs and are not exclusively health-focused. The skills that you acquire from undertaking this exercise are transferable when appraising studies from other disciplines.

First, read the full article (freely available online at the *BMJ* website). Then try undertaking a quality assessment using an appropriate checklist (suggested checklists are provided in Table 7.9). Then take a look at the accompanying reference provided for each of the three articles at the *Student BMJ*, which provides a critical appraisal summary of the article, drawing out the key issues. Try the quality assessment yourself (do not look at the corresponding *Student BMJ* article until you have completed it) and then take a look to see if you’ve identified the key points.