

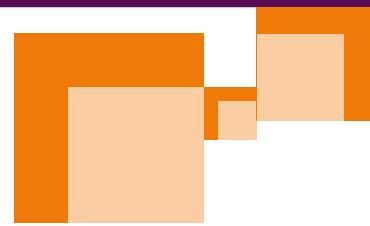
3. Appraising Research Evidence

Are there tools that we can use to measure the reliability of research?

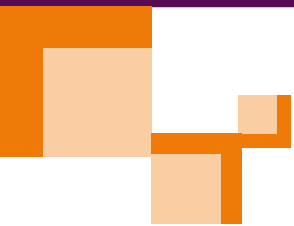
a. Study grading tool

Grade	Minimum Assurance*	Type of Evidence	Description	Strengths	Weaknesses	Comments	Impact on Service Users**
1	Positive reports from service users and practitioners at follow up	Personal testimony Practice experience	Account by a person intimately acquainted with or affected by a particular issue Accumulated wisdom from repeated exposure to similar situations or problems	Powerful and immediate; may give vivid insights into events concealed from much of the population Results in rapid and intuitive understanding of complex situations	Difficult to verify; may lead to inflation of prevalence; accounts of distressing personal trauma may inhibit critical appraisal Errors can be consistently repeated unless tested by other sources of evidence; hard for lay people to challenge	Sufficient basis for pilot intervention where plausible link between activities and outcomes exists	Unknown effectiveness
2	Several positive pre-post studies comparing performance at baseline to follow up	Client opinion study Single case design	Narrative or survey accounts of user views or reported needs Repeated standardised measurement of a client's situation or problems over time	Valuable insights from those at the receiving end; compels professionals to stay focused on the client's priorities Easy and practical; can be used by practitioners with minimal training; clients are able to collaborate and contribute	Correlation between satisfaction and actual outcomes is low; needs described may not translate into actual service use More difficult to apply without the client's active engagement; absence of controls weakens attribution of cause and effect	Sufficient basis for pilot intervention at multiple sites where plausible link between activities and outcomes exists	Limited evidence of effectiveness

* Minimum assurance – refers to the minimum level of evidence required to meet this category.
 ** Impact on service users – refers to ability of evidence to demonstrate causal relationship (ie. intervention x causes outcome y)



Grade	Minimum Assurance*	Type of Evidence	Description	Strengths	Weaknesses	Comments	Impact on Service Users**
3	Positive evaluations by several studies featuring comparison groups	<p>Quasi-experimental study</p> <p>Cross sectional study</p> <p>Cohort study</p>	<p>Different interventions are offered; no random allocation to groups; use of natural populations</p> <p>Same measures repeated over time with different populations</p> <p>Same measures repeated over time with the same population</p>	<p>Powerful method of exploring the impact of an intervention when randomisation is impossible; can be applied to communities as well as groups</p> <p>Survey can be repeated at intervals, illustrating changing trends over time</p> <p>Best source of evidence on association between childhood experience and adult outcomes; can give powerful support for certain early interventions</p>	<p>Difficulty in ensuring equivalence of groups and natural changes in group composition over time can result in less reliable findings</p> <p>May be hard to detect why changes have occurred; difficult to observe trends in minority populations</p> <p>Data often emerge too late for policy making; drop out over time; expensive when maintained over decades; link between cause and effect not always clear</p>	<p>Basis for investment where need is urgent and more robust evaluation results are not immediately available</p>	<p>May be beneficial</p>



Grade	Minimum Assurance*	Type of Evidence	Description	Strengths	Weaknesses	Comments	Impact on Service Users**
4	Positive evaluations by several randomised controlled trials	Randomised controlled trial (RCT)	One group receives an intervention, another receives none or an intervention of another type; the chance of being allocated to either group is identical	Changes in the client's situation can be attributed to the intervention with a high degree of confidence; best approach for controlling bias; transparent methodology means results can be independently checked and replicated	Mistakes in randomisation can invalidate results; cannot be applied to many important social problems (e.g. cot deaths); an equal chance that benefits will occur in both groups; ethical difficulties may arise; high level of statistical skill may be required for analysis; results may be highly context specific and hence difficult to generalise;; transferability of findings may be weakened by culture and nationality	Highly desirable for large investment in single service site, but should not be considered for roll out until further evidence is collected	Likely to be beneficial
5	Intervention positively evaluated by at least one systematic review or meta-analysis	Systematic review Meta-analysis	Aggregation of results from eligible studies; eligibility criteria defined in advance (usually but not necessarily RCTs); review methodology is replicable	Best source of assurance that an intervention works (or doesn't); meta-analysis pools numerical results; large reviews carry great statistical power; can be applied to any kind of data; pooling of results gives more accurate indication of actual effect size by moderating outliers (e.g. a value that differs from most others in the data set)	Requires a substantial number of robust primary studies in a given area; methodology less well developed for synthesising qualitative data; results may be hard to apply in specific cases; strict inclusion criteria may result in few or no eligible studies; reviews are expensive and technically demanding	Highly desirable for large investment in multiple service sites	Highly likely to be beneficial

KEY

Low
Proceed only when the possibility of harm is very low

Medium
Proceed with caution; seek stronger evidence

High
Proceed with confidence but monitor changing evidence base



b. Appraising randomised controlled trials

Critical Thinking Tool: Randomised Controlled Trials (RCTs)

This critical thinking tool is designed to help you work through and make sense of research articles that report the results of randomised controlled trials (RCTs).

The 13 questions that follow are designed to help you:

- appraise the quality of the research;
- decide whether you feel the study is trustworthy enough so that you would feel comfortable using its results to inform your practice;
- consider how relevant the research is to your own service(s).

The main questions are in bold. These are followed by points to consider to help think through your answers.

The first two questions are for 'screening' purposes. If you answer 'yes' to both of these it is worth working through the rest of the paper. However, if you answer 'no' to either of them the trustworthiness of the study is questionable. This means you would not want to apply its findings to your practice. Therefore, it is probably not worth taking the time, trouble and effort to read the rest of the paper.

If you find that you answer 'yes' to most of the 13 questions, the quality of the study is likely to be high and worthwhile using in practice decision-making. If you answer 'no' to the majority of the questions, the opposite is true.

The questions are adapted from Guyatt GH, Sackett DL, and Cook DJ, Users' guides to the medical literature. II. How to use an article about therapy or prevention. JAMA 1993; 270 (21): 2598-2601 and JAMA 1994; 271(1): 59-63

This tool draws heavily from the tools developed by the 'Critical Appraisal Skills Programme', Milton Keynes Primary Care Trust 2002.

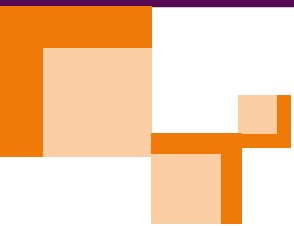
Please circle the appropriate answers to the questions below

Screening

1. Were the aims of the research clear?

- | Y | N |
|--|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| – Who was the <i>client group</i> being investigated? | |
| – What was the <i>intervention</i> being given? | |
| – What services/intervention did the <i>control group</i> receive? | |
| – What <i>outcomes</i> were considered? | |

Please write in the box what the aims of the research were, or what the research question was. (Everything that is done in the piece of research should relate to this question).



2. Was a randomised controlled trial the right sort of research design to use to answer the research question?

Y N

- Did the study aim to find out about the effectiveness of an intervention or service?

Is it worth continuing?

Y N

Methods

3. Were the participants allocated to the intervention or control groups in a way that really was random?

Y Not enough detail given N

- For example, were random number tables, the roll of a die, the flip of a coin, names out of a hat used, rather than allocating people alphabetically or consecutively?

4. Was allocation in the study concealed?

Y Not enough detail given N

- Was the process of allocation done as independently as possible from all those involved in the care of people taking part in the study e.g. making sure it was not a social worker providing the clients' care who allocated her clients to the intervention or control groups?
- Were steps taken to stop people 'tinkering' with which groups people were allocated to e.g. by using sealed envelopes?

5. If it was possible to do so, were the participants, the people providing the intervention/service, and the assessors 'blind' to, or unaware of, group allocation?

Y To some extent N

- 'Blinding' is not always possible.
- Having 'blind' assessors is the most important element of 'blinding'.

6. Were the intervention and control group well matched at the beginning of the study?

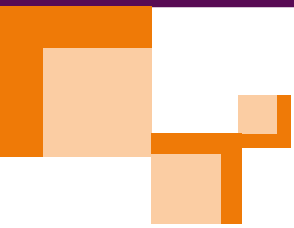
Y To some extent N

- For example, did the researchers produce a table listing key demographic information (e.g. age, sex) separately for the intervention and control groups?
- Were there any key differences between the groups at baseline, which might, in part, account for any differences in outcome (known as *confounders*)?

7. Was the number of participants in the study justified?

Y Not enough detail given N

- Is there a *power calculation* which showed that there were enough people in the study to find a difference in outcome between the intervention and control groups if one existed? (If there were not enough participants, the study may not have found a difference purely because too few people took part).



Relevance

13. Is this study relevant to your clients and/or practice?

Y	To some extent	N
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c. Appraising quasi-experimental trials

Critical Thinking Tool: Quasi-experimental studies

This critical thinking tool is designed to help you work through and make sense of research articles that report the results of quasi-experimental studies.

The 13 questions that follow are designed to help you:

- appraise the quality of the research;
- decide whether you feel the study is trustworthy enough so that you would feel comfortable using its results to inform your practice;
- consider how relevant the research is to your own service(s).

The main questions are in bold. These are followed by points to consider to help think through your answers.

The first two questions are for 'screening' purposes. If you answer 'yes' to both of these it is worth working through the rest of the paper. However, if you answer 'no' to either of them the trustworthiness of the study is questionable. This means you would not want to apply its findings to your practice. Therefore, it is probably not worth taking the time, trouble and effort to read the rest of the paper.

If you find that you answer 'yes' to most of the 13 questions, the quality of the study is likely to be high and worthwhile using in practice decision-making. If you answer 'no' to the majority of the questions, the opposite is true.

The questions are adapted from Guyatt GH, Sackett DL, and Cook DJ, Users' guides to the medical literature. II. How to use an article about therapy or prevention. *JAMA* 1993; 270 (21): 2598-2601 and *JAMA* 1994; 271(1): 59-63

This tool draws heavily from the tools developed by the 'Critical Appraisal Skills Programme', Milton Keynes Primary Care Trust 2002.

Please circle the appropriate response in the questions below

Screening Questions

1. Were the aims of the research clear?

Y	N
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>



- What services/intervention did the *control* group receive?
- What *outcomes* were considered?

Please write in the box what the aims of the research were, or what the research question was. (Everything that is done in the piece of research should relate to this question).

2. Was a quasi-experimental study the right sort of research design to use to answer the question?

Y N

- Did the study aim to find out about the effectiveness of an intervention or service, but it would have been very complicated or impossible to have conducted a randomised controlled trial?

Is it worth continuing?

Y N

Methods

3. Do the researchers justify why a randomised controlled trial would not have been possible or desirable?

Y To some extent N

4. Were participants recruited to the intervention and control groups in a way that minimised bias and confounders?

Y To some extent N

- For example, were the same inclusion and exclusion criteria applied to both groups?
- Were the intervention and control groups stratified on factors that might affect the outcome?

5. Were the intervention and control groups well matched at the beginning of the study?

Y To some extent N

- For example, did the researchers produce a table listing key demographic information (e.g. age, sex) separately for the intervention and control groups?
- Were there any key differences between the groups at baseline, which might, in part, account for any differences in outcome (known as *confounders*)?

6. Was the number of participants in the study justified?

Y Not enough detail given N

- Is there a *power calculation* which showed that there were enough people in the study to find a difference in outcome between the intervention and control groups if one existed? (If there were not enough participants, the study may not have found a difference purely because too few people took part).



Relevance

13. Is this study relevant to your clients and/or practice?

- | Y | To some extent | N |
|---|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> – Were the participants in the study similar to your clients? (Is there any reason to think that conducting the quasi-experimental study on your clients would have given different results?) – Would people in your client group have been excluded from the study (on the basis of its inclusion and exclusion criteria)? If so, this might make you question the relevance of the research to your practice. – Is your local setting similar to that in the study? – Would it be possible for you to provide the same intervention/service in your setting? | | |

d. Appraising qualitative research

Critical Thinking Tool: Qualitative research

This critical thinking tool is designed to help you work through and make sense of qualitative research studies.

The 13 questions that follow are designed to help you:

- appraise the quality of the research;
- decide whether you feel the study is trustworthy enough so that you would feel comfortable using its results to inform your practice;
- consider how relevant the research is to your own service(s).

The main questions are in bold. These are followed by points to consider to help think through your answers.

The first two questions are for 'screening' purposes. If you answer 'yes' to both of these it is worth working through the rest of the paper. However, if you answer 'no' to either of them the trustworthiness of the study is questionable. This means you would not want to apply its findings to your practice. Therefore, it is probably not worth taking the time, trouble and effort to read the rest of the paper.

If you find that you answer 'yes' to most of the 13 questions, the quality of the study is likely to be high and worthwhile using in practice decision-making. If you answer 'no' to the majority of the questions, the opposite is true.

This tool draws heavily from the tools developed by the 'National CASP collaboration for qualitative methodologies'. Milton Keynes Primary Care Trust 2002.

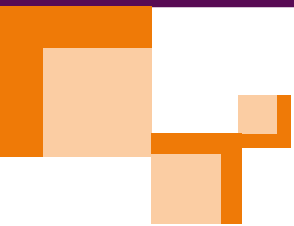
Please circle the appropriate answers to the questions below

Screening

1. Were the aims of the research clear?

- | Y | N |
|---|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> – Was it clear why the researchers were carrying out the study? | |

Please write in the box what the aims of the research were, or what the research question was. (Everything that is done in the piece of research should relate to this question).



--

2. Was qualitative research the right sort of approach to use to answer the research question?

Y N

- Did the researchers aim to interpret or illuminate peoples’ actions and/or their experiences?

Is it worth continuing?

Y N

Methods

3. Was the research design used the most appropriate to address the aims of the study?

Y N

- For example, if interviews, focus groups or an observational design were used, was this appropriate?

4. Was the sampling strategy used for the study clear/appropriate?

Y To some extent N

- For example, did the researchers make clear how participants were selected to take part? Was this appropriate in terms of answering the research question? Were they clear about the parameters of their sample, i.e. those to be included and those to be excluded?

5. Was the number of participants in the study justified?

Y To some extent N

- For example, did the researchers state that data saturation had been reached?

6. Did the way that the data was collected fit with the aims of the study?

Y To some extent N

Was it clear:

- *Where* the data was collected? e.g. an office or peoples’ own homes?
- By *whom*? e.g. was this person an independent researcher, a service provider?
- *How* the data was collected? e.g. using a focus group topic guide, unstructured interviews? Tape-recorded, videoed, hand written notes?
- How *long* this took? e.g. were participants interviewed for 10 minutes or two hours? Were they observed once a week for two months, or just on one occasion?

7. Was data collection systematic?

Y To some extent N

- Did the researchers adopt a similar approach to collecting data with each participant involved in the study?
- Was all the data recorded in the same way?



8. Was it clear how the data was analysed?

Y To some extent N

- For example, was it coded, themed?
- What data analysis technique was used e.g. grounded theory, discourse analysis, framework analysis?

Results

9. Are the results clearly presented and are they appropriate?

Y To some extent N

- Was it clear how the themes presented were derived?
- Was there a sufficient amount of the original data presented to support how the data was interpreted?
- Did the data that was presented support the study findings?
- Did quotes come from a range of participants?
- Did the researchers discuss data that did not support their findings?

Briefly describe the main results:

10. Were steps taken to increase the trustworthiness of the study findings?

Y To some extent N

- Did researchers feedback results to study participants and ask them to comment on their accuracy?
- Did they triangulate their data in any way? e.g. with existing, relevant research, or via different research methods?
- Did they ask a colleague to check their interpretation of the data?

11. Did the researchers critically examine their role, potential bias and influence on the study findings?

Y To some extent N

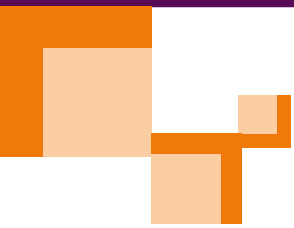
- For example, were their biases considered during data collection, analysis and selection of data for presentation?

Ethics

12. Were ethical issues addressed?

Y To some extent N

- Did the researchers seek approval for the research from an ethics committee?
- Was it clear how the study was explained to participants?
- Did the researchers obtain informed consent from participants?
- Was confidentiality ensured?



Relevance

13. Is this study relevant to your clients and/or practice?

Y To some extent N

- Were the participants in the study similar to your clients? (Is there any reason to think that conducting the research with your clients would have given different results?)
- Would people in your client group have been excluded from the study (on the basis of the sampling strategy)? If so, this might make you question the relevance of the research to your practice.
- Is your local setting similar to that in the study?
- Would it be possible for you to provide the same intervention/service in your setting?