

DOING A LITERATURE REVIEW IN NURSING, HEALTH AND SOCIAL CARE

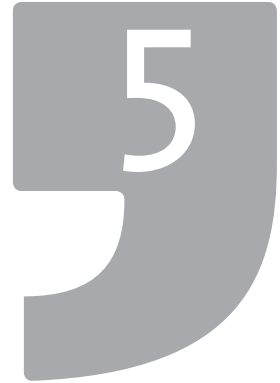
3RD
EDITION

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CRITICALLY APPRAISING THE LITERATURE



Learning Outcomes

The aim of this chapter is to help you:

- Compare and contrast related findings in the literature.
- Differentiate between articles using a post-positivist and a naturalistic research methodology.
- Critically appraise quantitative and qualitative research, mixed methods research and systematic reviews.
- Critically appraise non-research articles.

Introduction

Once the studies that meet the criteria for your review have been selected, the next step that needs consideration is how to present this literature clearly and succinctly to the reader. The studies will have to be read to identify their findings and these will need to be compared and contrasted with the findings of other similar studies. The outcomes from these comparable studies can often be the foundation for the development of the subheadings or themes that are used to present the literature in the review. Themes or subheadings are considered a means of collating studies' commonalities, and they can also help to avoid your review becoming a rambling collection of isolated research studies.

The studies in your review also need to be critically appraised. The reader does not have the benefit of reading the original articles so is depending on you, the reviewer, to distinguish between those studies that are robust and those studies in which the limitations may have influenced the outcomes. It is important to realise that there is no such thing as the perfect research study. Every research study has some limitations, however it is expected that the strengths of a study will exceed its limitations, and that the limitations are minor, in which case the study is usually regarded as being robust.

Identifying Themes

Once the search of the literature is complete and the relevant studies have been selected you may find that you have quite a large number of studies to include in your review and a limited word count in which to do this. The most effective way of managing this situation is to develop a framework of themes with which to present these studies. While reading the studies to determine which you were going to select, you will probably have noticed that certain related issues and concerns were identified and discussed in many of them. These related issues and concerns, if suitable, can form the basis for one or more of the themes that can then be used to summarise the findings of the studies you have gathered, and present and discuss them in relation to that theme (Oermann et al., 2018). Oermann et al. (2018) add that reviews that do not use themes tend to have less influence on the reader, as they tend to discuss studies individually, which can result in overburdening the reader with unassimilated information.

Teece et al. (2020) used themes, in their review of the determinants for the application of restraints, to present their literature (see Box 5.1). Some research studies address issues that may be represented by more than one theme, and in such cases the same article can appear under more than one theme heading.

Box 5.1 Use of Themes/Subheadings

Each study was based within critical care, with samples drawn from staff and/or patients. The thematic analysis generated four over-arching themes: the lack of standardised practice, patient characteristics associated with restraint use, the struggle in practice and the decision to apply restraint.

(Teece et al., 2020: 8)

There is no strict rule regarding the number of studies included in each theme. There should be at least enough studies to offer a reasonably in-depth discussion on that theme. Similarly, the number of themes will depend to a degree on the word count available. Too many themes can reduce the number of studies in each theme and consequently diminish the depth of analysis and discussion, which may weaken the review. Usually, three or four themes are regarded as offering a good insight into the topic and a reasonable depth of discussion within the individual themes.

Having identified the themes, it is important to ensure that the studies you include in that section relate to that theme. Quite often, novice reviewers can

include studies not directly related to that subheading and find they have moved away from the original theme. It is important, therefore, to constantly check that the findings being discussed are connected to the title of that theme. If the literature under a particular subheading appears to be leading in multiple directions, it may be that the heading is too broad and may need to be refined.

Comparing and Contrasting the Literature

As previously mentioned, themes reflect the findings and outcomes of studies. Literature reviews are not about presenting a series of findings from individual studies but presenting collective outcomes from the multiple studies that relate to a theme (Oermann et al., 2018). Consequently, the findings of these studies should be compared and contrasted in relation to that theme. Comparing and contrasting the methodologies, populations and samples can also be helpful as they can show the similarity or diversity that exists in the cohorts included in the studies. Sample size and adherence to methodological principles can also offer an insight into the robustness of the individual studies. It is important to remember that research should not be taken at face value and should be critically appraised so the reader can make an informed judgement.

As well as presenting studies that support each other, it is also important to present studies with alternative findings. Reviews should be about presenting both sides of the debate so that the reader is informed. Studies that have alternative findings are not necessarily inaccurate and, in fact, because they may have a larger sample size, or perhaps due to the use of a more appropriate methodology, may be more accurate in their findings. It is therefore important that you critically review the methodologies used when comparing studies on both sides of the debate and perhaps offer a rationale as to why the findings appear to differ.

Differentiating Between Quantitative and Qualitative Research

When undertaking a review of the literature the majority of studies included should be research studies and appraising these research studies is an important part of the presentation of the literature. It is therefore important to have an understanding of the different research paradigms and the research methodologies that are associated with them. The approaches to research can be broadly classified into quantitative research, which includes the positivist and the post-positivist paradigms, and qualitative research, which includes the interpretivist/constructivist paradigm and the critical/transformational/participatory/advocacy paradigm (Cronin et al., 2015).

Modern quantitative research is strongly influenced by the post-positivist paradigm. This type of research is concerned with measurable objective outcomes. However, measurable outcomes in post-positivist research are only indicators of a probable result and not an indicator of proof. For example, when research indicates that there is a strong probability that cigarette smoking leads to lung cancer, it is not stating that it will, only that there is a good chance that it will. In order to demonstrate this type of outcome the ideal group to use would be the whole population, but as this is practically impossible, a representative sample from the population is the next best thing. Statistics can then be used to determine how representative this result is or how probable it is that the outcome is due to chance. So quantitative research is interested in using statistics to study large numbers of subjects in order to determine what the probable answer to the research question will be. There are a number of different research approaches associated with the post-positivist paradigm and some of these can be seen in Box 5.2.

In contrast to the post-positivist deductive approach to measurable outcomes, the paradigms associated with qualitative research focus more on the experiences and beliefs of the individual. Proponents of this approach claim that the individual's experience needs to be studied in a holistic way rather than simply examining one or two isolated variables (Polit and Beck, 2017). Qualitative designs subscribe to the notion of subjective multiple realities that are constructed by individuals and are contextually framed. Data are not measured numerically and are usually collected through interviews, focus groups and/or observation. The findings from this type of research reflect the views of the individual and are not generalisable to the population. Some of the different approaches used in this type of research can be seen in Box 5.2.

Box 5.2 Research Paradigms and Associated Approaches

Post-Positivist Paradigm

Descriptive quantitative research.

Comparative descriptive research.

Correlational research.

Quasi-experimental research.

Experimental research.

(Continued)

Interpretivist/Constructivist Paradigm

Qualitative descriptive research.

Phenomenology.

Grounded theory.

Ethnography.

Critical/Transformative/Participatory/Advocacy Paradigm

Critical theory.

Feminist theory.

Participatory action research.

Appraising Research

When discussing the findings or outcomes of a research study in your literature review, it is important to be able to identify for the reader how robust those findings are. The robustness of the study will depend on how well the methodology was adhered to and methods used in undertaking the study. The purpose of appraising a research study is to identify the strengths and limitations that exist within that piece of work (Gray et al., 2017). It is wrong to assume that because something appears in print, or because an author appears well-qualified, that the findings will be accurate or that the study was undertaken in a robust manner. Novice reviewers can sometimes find it daunting to be faced with critically appraising an article that has been published in a prestigious journal or written by an individual or individuals who appear so much better qualified. On the other hand, it is important to recognise that even well-known journals have published and later retracted works when they were shown to be inaccurate or fake. Pluckrose et al. (2018) published an article in an online magazine identifying how and why they fabricated research studies, four of which had been published before their hoax was identified in the press. While incidents like this are rare, it highlights the importance of always reading research with a critical eye and never taking what is written at face value.

It is important to recognise that there is a difference between critically appraising an article and criticising it. Identifying the limitations of a study without recognising its strengths may encourage readers to dismiss the content of that study without having reviewed it. On the other hand, identifying only the strengths of a study may make that study appear more influential to the reader than it actually is (Gray et al., 2017). A critical appraisal should be an impersonal, objective review of a study identifying both its strengths and weaknesses.

Critical appraisal is also different from a critique. A critique of a study usually looks at all the steps in the research process undertaken by the researcher when performing a study and compares these to what is generally regarded as the accepted standard. This type of critique is usually comprehensive in nature and considers such factors as the organisation and presentation of the study, the literature review, methodological issues, findings and discussion. Critiques are undertaken by peer reviewers for a journal, or as academic assignments to encourage research students to critically apply their newly acquired knowledge of the research process in evaluating a single study (Polit and Beck, 2017). However, when critically appraising studies in a literature review, the analysis will not be in the form of a comprehensive critique, otherwise the review would simply be a series of critiques. Rather, the analysis identifies one or two important strengths and/or limitations that will allow the reader to make a judgement on that study. There are numerous tools available for critiquing research studies. Some of these instruments were developed to critique both quantitative and qualitative studies, while others were developed to critique either quantitative or qualitative research. As mentioned, when critically appraising a study as part of a literature review only one or two elements presented in the critiquing tool will be used. These elements should focus on the robustness of the study and identify and discuss its strengths and/or limitations. Other instruments that are available for appraising different types of research studies and systematic reviews are available at the following websites:

Critical Appraisal Skills Programme (CASP) (2018) <https://casp-uk.net/casp-tools-checklists/>

Scottish Intercollegiate Guidelines Network (SIGN) (2019) www.sign.ac.uk/checklists-and-notes.html

The purpose of critically appraising studies, as previously stated, is to ensure that research studies that influence practice or that are used to support concepts within a literature review are methodologically robust and have quality evidence that is relevant (Johnson and Taylor, 2014). A guide to determining the relevance and critically appraising a research study can be found in Table 5.1.

Table 5.1 Guidelines for critically appraising a research study

Verify whether the study is relevant to the review	Read the title and the abstract of the study
Review the study in detail and consider its robustness	Explore the study and become familiar with the purpose and the methodology used. Identify and appraise how faithful the authors were to the steps in the research process
Identify the strengths and limitations	Offer examples of strengths and limitations as appropriate. Support the implications of your appraisal with evidence from the literature

(Continued)

Table 5.1 (Continued)

Recommendations for future studies in this field	The author may have identified how this study might be improved, any gaps in the literature and suggestions for future studies
Overall evaluation of the study	This is an objective indication of how you rate the study in the context of the robustness of the study and its contribution to the topic being studied

(Source: Adapted from Cronin et al., 2015)

Relevance of the Study

When undertaking a search of the literature there are always a number of research studies and articles identified that are of little or no relevance to the current review of the literature. As there can be quite a lot of literature to examine and time is often a constraining factor, it is important to quickly determine which studies are relevant and which ones are unwanted. A more in-depth discussion on this can be seen in Chapter 4.

Determining the Robustness of the Study

Having decided that a study is relevant and will be included in the review the next step is to critically appraise the methodology of the study. There are philosophical differences between the purposes that underpin quantitative and qualitative research, so it is essential when evaluating the robustness of a study that you have a good understanding of the approach being used in that study and how the steps in the research process are applied in the methodology. In a quantitative study, for instance, the literature review is used to determine what information is available on this topic to refine the research problem, and it may suggest approaches for further investigation of this topic. To achieve these goals the literature review needs to be undertaken early in the study. On the other hand, in some qualitative approaches such as grounded theory and phenomenology the literature search is undertaken after the data is gathered and analysed to reduce the risk that the researcher might be influenced by the literature. The purpose of a literature review in these qualitative approaches is to gather knowledge on the phenomenon of interest to support the themes that arise from the study data. Questions that can help you determine the robustness of quantitative and qualitative research studies can be identified from the following critiquing tools.

Critiquing a Quantitative Research Study

While there are numerous different instruments available for critiquing quantitative research, these instruments are based on the same principles and ask

similar questions. However, some questions are more important than others especially in relation to evaluating the robustness of a study. When critically appraising a study for a literature review the questions that are most likely to be of importance are those that focus on the integrity or robustness of the study (Coughlan et al., 2007), however for the sake of completeness those questions that focus on the credibility of the study will also be included. When using a critique instrument to analyse a study it is best to read through the study a few times and become familiar with the content before deciding which elements of the instrument you will use in your appraisal.

Questions Related to Credibility in Quantitative Research

Credibility or believability questions are often presented first in a critiquing tool. These questions focus on aspects of the work such as writing style, the author's qualifications, the title of the work and the abstract. Asking these questions can be helpful when reviewing a study as they can offer the reviewer some insight into how well the study may have been conducted. However, a common error that is made by students or novices in the art of critiquing or critical analysis is to state that a study is 'weak' based on credibility variables. These questions do not look at the integrity of the study and although they may offer a first impression, judgements should be reserved until the questions related to the robustness of the study are appraised.

In considering the questions posed in these tools you should regard them as stimulating inquiry. So rather than responding with a simple yes or no answer, you should reflect on the possible implications of the researcher's action and whether this appears to strengthen or limit the credibility or the integrity of the study, depending on which factors and questions are being reviewed (see Table 5.2).

Author: The expertise and qualifications of the author(s) can be good indicators of the knowledge and skills that they bring to the study. A background and familiarity with the topic under investigation increases the likelihood that the questions will be relevant and reflect the reality of the situation. On the other hand, novice researchers with little background in an area can still do very good research, and experienced researchers can do poor research. So never assume that because the researcher is well-qualified that the study will not have limitations.

Writing Style: A research report should be written in a clear and concise style. It should be easily understood by the reader, and grammatically correct avoiding the unnecessary use of jargon and colloquialisms. It is usually expected that quantitative reports are written in the third person, which is deemed to increase objectivity.

Title: The title should identify for the reader what the study is about in a clear and concise way. A question frequently asked is how long should a report title be? Titles should be long enough to give the reader sufficient information as

to what the study is about but short enough to avoid confusion (Parahoo, 2014). A general rule of thumb is that they should be between 10 and 15 words in length.

Abstract: Abstracts are expected to be concise but offer enough information for the reader to determine whether this study is of interest. The abstract should identify the purpose of the study and offer an overview of the research method, sample, the main findings, conclusions and recommendations. They are usually about 150–200 words in length, but there are variations between journals. In some journals, abstracts may not be clearly identified or included.

Table 5.2 Credibility and integrity factors in a quantitative research study

Credibility/believability: influencing factors and related questions	
Author	Do the author's experiences and/or qualifications suggest a knowledge or expertise in this particular field of enquiry?
Writing style	Is the research report structured in a clear and logical manner? Is it easily read and understood, grammatically correct and does it avoid the excessive use of jargon?
Title	Does the report title identify what the study is about in a clear and unambiguous way?
Abstract	Is an outline of the study clearly present? Does it include the research problem, sampling method and size, methodology, findings and recommendations?
Integrity/robustness: influencing factors and related questions	
Logical consistency	Is the study presented in a logical order following the steps of the research process?
Research problem/purpose	Is the purpose of the study or the research problem clearly defined?
Review of the literature	Is the literature review presented in an organised manner, demonstrating development of themes from previous research? Does the literature review offer a balanced overview of the research problem/topic of interest? Is there evidence of critical appraisal of the works presented? Is the literature mainly from primary sources and is it mainly empirical or theoretical in nature?
Theoretical framework	Has a conceptual framework been identified? If yes, is it clearly described and is it an appropriate framework for this study?
Research question/hypothesis aims/objectives	Have the research question/hypothesis/aims/objectives been presented in a clear and concise manner? Do they reflect the purpose of the study/research problem and the information gleaned from the literature review?
Operational definitions	Have all the terms, theories and concepts that may influence the study been defined and clearly described to the reader?

Integrity/robustness: influencing factors and related questions

Research design	Have the research design and the rationale for selecting it been discussed?
Data gathering	Has the research instrument been described? Is it appropriate for this study? How was it developed? Were reliability and validity testing performed? Were the results of these discussed? Was a pilot study performed?
Sample	Was the target population described? Was the method of sample selection described? Was a probability or non-probability sampling technique used? Was the sample size adequate? Were inclusion/exclusion criteria identified?
Ethical considerations	Were participants given enough information to make an informed choice in regard to participating in the study? Was confidentiality/anonymity guaranteed by the researcher? Were the participants protected from harm? Was ethical approval granted for this study?
Findings/data analysis	Were the data/statistical analysis undertaken appropriate for the study? How many of the sample participated in the study? Were the data tables/charts accurate? Significance of the findings?
Discussion	Were the findings discussed with reference to the literature review? If there was a hypothesis was it supported or rejected? Did the author(s) discuss the strengths and limitations of the study? Were recommendations for future studies identified?
References	Were all the texts, journal articles, websites and other media sources referred to in the study accurately referenced?

Questions Related to Integrity in Quantitative Research

These questions are used to determine the robustness of the study and how thoroughly the steps in the research process were adhered to. It is through the questions within this section that the strengths or limitations of a study can be determined.

Logical Consistency: A research study should be well-structured and be presented in a rational manner that indicates that the researcher(s) followed the steps in the research process. The steps should be clearly identifiable with a logical development as the study progresses from the research problem through the literature review and onwards.

Research Problem/Purpose: The research problem or purpose of the study is usually identified early in the work and offers the reader a broad indicator of what is to be investigated. It often represents a general area of interest which may need to be further refined.

Review of the Literature: In a quantitative research study the function of a literature review is to explore and refine the research problem. Any gaps in the literature related to the research problem should be identified. There should be evidence that an appropriate depth and breadth of reading related to the topic

was undertaken. While the majority of studies presented should be of recent origin, usually within the last five years, this will depend on the amount of literature available related to the research problem. It is also important that influential seminal works are included as these can help to put the study in context.

The source and the nature of the literature presented are two other important considerations. The literature should come from the primary source – that is, the original author – with secondary cited sourced literature only being used in exceptional circumstances. Additionally, the literature in a review should be mainly empirical in nature rather than from anecdotal or opinion articles that are not research-based.

In the introduction to the literature review it is expected that the keywords and databases used in the literature search would be identified. The author then usually identifies the themes that emerged from the literature as a means of signposting how the literature will be presented. The literature presented should be critically analysed and the strengths and limitations of studies included should be identified for the reader.

Theoretical Framework: A theoretical or conceptual framework is a means of organising a study. While the terms are often used interchangeably, Polit and Beck (2017) state that where the study is constructed around a theory, the framework is theoretical, and where the study uses a conceptual model as a framework, it is regarded as a conceptual framework. Frameworks can help researchers be more explicit in what they are seeking to find, and help the reader to more clearly understand what is being tested. It must be stated that while not all researchers are explicit in identifying their theoretical frameworks, every study has a framework (Polit and Beck, 2017). Experimental and correlational studies tend to have theoretical frameworks that are more explicit and better developed; there is a greater likelihood of an implicit framework being found in descriptive studies. Ideally the theoretical framework should be explicitly stated.

Operational Definitions: It is quite common in a study to find terms or concepts whose meanings can vary considerably between one part of the world and another, or even from country to country, and thus alter the reader's perception of the research. It is therefore necessary that the researcher ensures that all concepts and terms mentioned within the study are clearly defined so that the reader understands what exactly is being referred to.

Research Question/Hypothesis/Aims/Objectives: The initial research problem or purpose as mentioned earlier is a broad indicator of what is to be studied. After the review of the literature this should have been refined and the result is the research question, hypothesis or both. The research question and hypothesis seek to investigate or test what was found in the literature search. Aims and objectives are linked to the research question or hypothesis, such as finding an answer to the research question, testing the hypothesis or suggesting recommendations and interventions (Polit and Beck, 2017).

In descriptive quantitative studies a research question will be used to express the focus of the research. In correlational studies, where the existence of a relationship between variables is the focus of the research, research questions and/or hypotheses (a hypothesis is the research question expressed as a statement) may be presented. In experimental, quasi-experimental studies and randomised control trials (RCTs) hypotheses are used to identify the variables that are being explored. Aims and objectives can be used with the research question or hypothesis in all these methodologies.

Research Design: The research design describes how the researcher structured the study and the methods that were used to gather data and analyse the results (Gray et al., 2017). The researcher is expected to clearly describe the research design that has been selected and discuss why it was selected. The approach should be congruent with the purpose of the study. The type of quantitative research design selected will influence, to a large degree, how the study will be performed, the method of data gathering, and the type of analysis that will be performed on the data gathered. For example, in a descriptive survey the data gathering method will be some form of questionnaire. The administration of this may vary such as by post, face to face, or online. As it is a descriptive study the statistics performed would be mainly descriptive.

Data Gathering: The next consideration is the data gathering instrument. Whether it is some form of questionnaire or a check list or rating scale for an observational study, it needs to be appropriate for what the researcher is attempting to achieve. Depending on what the researcher is investigating, there may be research instruments available that can be purchased for use or used with the designer's permission. However, it may also be necessary for a researcher to develop a new instrument or adapt a pre-existing one.

An important feature of any research instrument is its ability to measure what it is supposed to measure (validity) and the consistency with which it measures these variables (reliability). Consequently, it is important that the researcher assesses both the validity and the reliability of the instrument that is being used. The exception can be some of the established instruments that have been shown to have strong validity and reliability with a variety of populations. In these cases, the results from appropriate previous studies in relation to validity and reliability should be presented. However, if the researcher has any doubts, has adapted the instrument in any way or is using it on a novel population, validity and reliability testing should be undertaken.

A pilot study can be described as field testing an instrument to determine how well it works with a small sample of the available population. Items that are unclear or ambiguous which were not noticed earlier can be identified and rectified at this stage before the main study is undertaken. Difficulties with sample selection and sample participation can also be diagnosed and corrected. The researcher should identify in their paper whether a pilot study was undertaken, the numbers involved and the response rate received, and any changes that were made as a result of this field test.

Sampling: In quantitative research, studies should attempt to select samples that are representative of the population so as to increase the probability of generalising the findings. In order to increase the chance of a representative sample at this stage, two things are required: a probability (random) sample and an adequate sample size. Probability samples can be difficult to achieve, so researchers sometimes use non-probability samples such as convenience sampling. Non-probability samples are less likely to be representative and this should be acknowledged by the researcher if this type of sampling is used. Sample size is important because there is always a risk that a minority group within the population might dominate the sample and skew the results. This is known as a sampling error. The larger the sample size the less likely this is to happen and the more likely the sample will be representative, but only if the sample is selected using a probability method. Another form of sampling bias occurs where a researcher selects the participants either by accident or design to achieve a desired outcome.

The researcher should clearly define who the population for the study were, what method of sampling was used and why, and what the sample size was. Inclusion and exclusion criteria should also be made explicit and if necessary justified.

Ethical Considerations: There are four fundamental ethical principles and four moral rules closely linked to these principles which should be adhered to in all research. These are *autonomy*, *beneficence*, *non-maleficence* and *justice*; and *veracity*, *fidelity*, *confidentiality* and *privacy* (Beauchamp and Childress, 2019). It is expected that the researcher will identify, within the study, how these principles and rules were adhered to and what processes were put in place to protect the participants. Autonomy implies that the participant has had the opportunity to make an informed decision as to whether or not to participate within the study. This decision should be made free from any coercion or the promise of reward. The principle of beneficence implies that the participant and/or society will benefit from the outcomes of the study. Non-maleficence implies that the research will cause no harm, either physical or psychological, to the participant. While the latter two principles may appear to be the same, they are more like the opposite sides of the same coin each with a different emphasis. Justice implies that all individuals and groups within the study are equal, and no group or individual will be privileged or disadvantaged because of their position within society. The four moral codes are closely linked to the principle of autonomy and imply the researcher will be honest, loyal and trustworthy in dealing with participants and respect the confidentiality and privacy of subjects whether or not they participate within the study.

The researcher should also state whether ethical approval was sought and identify the approving bodies. Hospitals and institutions will generally all have ethical committees to whom research proposals must be submitted before permission to undertake the research will be granted. In the case of

third-level students, permission is usually also required from the educational institution before research can be undertaken.

Findings/Data Analysis: In the findings section data is analysed and should be presented to the reader in a clear and concise format. The researcher usually starts by identifying how many of the sample participated in the study, which can be an important factor in determining how generalisable the results may be (Polit and Beck, 2017). Along with a probability sample and a good sample size, a reasonable response rate is the third factor that is needed to increase the chance of the findings being representative of the population. It is generally accepted that with postal or internet surveys participation rate can be 50 per cent or less and researchers need to put processes in place to get the best response rate possible (Polit and Beck, 2017).

In quantitative research, data is analysed using statistical tests. Usually descriptive research uses descriptive statistics to present findings, whereas correlational, quasi-experimental and experimental studies use both descriptive and inferential statistics. Descriptive statistics does what the name suggests and describes the numerical findings of the study. Inferential statistics is about drawing inferences or deductions from the results. The latter can be used to demonstrate if relationships exist, or if there are differences between variables, and the degree to which these relationships/differences are as a result of a chance occurrence or are potentially real. The latter is known as 'significance'. The lowest level of significance is $p \leq 0.05$, this means that the probability (p) of the result happening by chance is less than or equal to 5 out of 100 times.

The researcher should identify what types of statistical test were used in the study and the results should be presented to the reader. Tables, graphs and charts should enhance the clarity of the findings but should also be congruent with them.

Discussion: After presenting the results the researcher now needs to place these in context for the reader. If the study had a hypothesis, the researcher should state whether it was supported or rejected by the findings. He should also identify if the research question was answered and whether the aims or objectives were achieved. In the discussion section the researcher presents an explanation and an interpretation of what the results might mean. This is presented with reference to the literature that was appraised in the literature review and should be consistent with the findings presented. The researcher should also explore the implications for clinical practice that arise from the study. It is usually within this section that the researcher will acknowledge the strengths and limitations of the current study especially in relation to the significance of the findings and their generalisability to the target population.

The study presentation usually concludes with a summary of the research undertaken and the current state of knowledge in relation to the topic of interest. This is usually followed by recommendations on how the current study could be improved in future related research.

References: The author should ensure that there is an accurate bibliographical record of all the books, articles and other media sources referred to in the study. This can be a useful resource for clarifying information or for future studies in the area.

Critiquing Qualitative Research

Qualitative research is more than simply a different way of studying a phenomenon of interest. It differs from quantitative research in a number of fundamental areas such as:

- **The Nature of Knowledge** – it accepts that knowledge is subjective rather than objective.
- **Holism** – a phenomenon is more than the sum of its parts and cannot be reduced to a number of variables in order to study it.
- **Generalisability** – qualitative research is interested in exploring the individual's experience rather than attempting to generalise to the sample population (Polit and Beck, 2017).

Consequently, it is better to use a qualitative critiquing tool when analysing a qualitative study. As in the case of critically analysing quantitative research, there is a wide range of critiquing tools that can be utilised for analysing qualitative research. Most textbooks will usually offer a critiquing tool specifically aimed at qualitative research and again the principles underpinning these tools are similar. As with the critiquing tool presented for quantitative research, the influencing factors and related questions that focus on the integrity of a qualitative study are most likely to offer important insights into the robustness of the study. Factors and questions related to the credibility and integrity of a qualitative research study are presented in Table 5.3.

Table 5.3 Credibility and integrity factors in a qualitative research study

Credibility/believability: influencing factors and related questions	
Author	Do the author's experience and/or qualifications suggest a knowledge or expertise in this particular field of enquiry?
Writing style	Is the report on the study presented in a clear and organised manner? Is it easily read and understood, grammatically correct and avoiding excessive use of jargon?
Title	Does the report title identify what the study is about in a clear and unambiguous way?
Abstract	Is an outline of the study clearly present? Does it include the research problem; sampling method and size; methodology; findings and recommendations?

Integrity/robustness: influencing factors and related questions

Phenomenon of interest/purpose and the significance of the study	Is the phenomenon of interest, purpose of the study or the research problem clearly defined? Is the importance of this issue identified?
Review of the literature	Has a review of the relevant literature been undertaken? Does it reflect the philosophical underpinnings related to the qualitative methodology selected? Were the purposes of the review achieved?
Research question	Has a research question been identified? Does the research question reflect the research problem/phenomenon of interest?
Methodology and philosophical underpinning	Was research methodology identified? Why was this approach chosen? Did the researcher explain the philosophical underpinnings of the methodology selected?
Sample	Was the sample selection method discussed? Was the selection method suitable for the approach used? Did the sample have the necessary exposure to the phenomenon to inform the research?
Ethical considerations	Were participants given enough information to make an informed choice in regard to participating in the study? Was confidentiality guaranteed by the researcher? Were the participants protected from harm? Was ethical approval granted for this study?
Data collection and analysis	Were the methods for gathering data and data analysis discussed? Were these methods congruent with the research approach selected? Was data saturation achieved?
Rigour	How was the trustworthiness of the study assured? Did the researcher discuss elements such as credibility, auditability, transferability and confirmability?
Findings/discussion	Were the findings presented clearly? Were the participant quotations used appropriately to support the themes? Was the report placed in context with what was already known regarding the phenomenon? Was the research question answered and the original purpose of the study addressed?
Conclusions/implications/recommendations	Will the findings of this study be of interest to the profession? Were the implications for clinical practice identified? Were recommendations made as to how future research might develop the findings of this study?
References	Were all the texts, journal articles, websites and other media sources referred to in the study accurately referenced?

Questions Related to Credibility and Integrity in Qualitative Research

The factors influencing and the questions related to the credibility of a qualitative article are similar to those discussed earlier in this chapter for quantitative research. The factors and questions related to integrity, however, differ substantially demonstrating the differences in approach between these two

paradigms. As previously, it is within the integrity section that the strengths and limitations of a qualitative study can be recognised. It is important to remember that the qualitative paradigm consists of a number of different research approaches, each with their own distinct philosophy, processes of managing and analysing data, and their own discrete terminology (Gray et al., 2017). For example, within phenomenology there are a number of philosophical variations that lead to characteristic methods of managing and analysing data. Husserlian phenomenologists distance themselves from the phenomenon by 'bracketing' their views, beliefs and understandings so as to prevent these influencing their description of the participants' experience. This is in contrast to Heideggerian phenomenologists who do not believe bracketing is possible; they however use this pre-existing knowledge to help them interpret the participants' experiences. Ethnographic researchers use a different approach to data gathering, spending large amounts of time living or working in close proximity to their subjects, as well as observing or questioning them, in order to gain insights into their culture and way of life. An example of this can be seen in the movie *Avatar* which also demonstrates one of the potential difficulties: 'going native', where researchers completely lose their scholarly identity in favour of group membership. Grounded theory in contrast uses participants' perspectives to develop and verify hypotheses and so develop a theory grounded in the research. Despite these differences there are many similarities within these approaches and these are the common factors that can be critically analysed.

Phenomenon of Interest, Purpose and Significance of the Study:

A phenomenon can be described as an observable occurrence, such as aging or malnutrition, or a conceptual experience, such as pain or anxiety. The experience of a phenomenon can be influenced by numerous different factors, and so an experience could be construed quite differently by two individuals or even by the same individual under different conditions. The phenomenon to be studied should be explicitly identified and this should be reflected in the research question. The researcher should explain why this study is being undertaken and identify why this study is important to the patient and/or the profession. The researcher should also identify how this study will add to the body of information that already exists.

Review of the Literature: The function of the literature review in qualitative research is to identify and present what is already known regarding the phenomenon of interest. This in turn will be used to support the themes that emerge from the data. In some qualitative approaches the main literature review is not undertaken until after the data are gathered, although a brief review may be done to inform the researcher of previous work in relation to this phenomenon. Two such approaches are grounded theory and phenomenology. In grounded theory data gathering and analysis should be undertaken without being prejudiced by pre-existing influences. The purpose is to generate theory from the data gathered, so for this reason the review of

the literature is undertaken after data gathering is complete and with reference to the analysed data (Polit and Beck, 2017). In phenomenology the lived experience of the participants is the central focus of the research. The researcher here similarly attempts to avoid external influences until the participants' experiences have been described or interpreted, at which stage the literature is used to support the resultant themes (Gray et al., 2017). Ethnographic studies often use a combination of a short overview of literature at the outset of the study to contextualise the cultural issue to be investigated, and a more in-depth review later in the study to support the data analysis (Polit and Beck, 2017).

Whether the review is undertaken at the beginning of the study, as in a qualitative descriptive study, or after data analysis, the researcher should identify how the review was undertaken. If the literature review is done at the beginning of the study it should be similar in nature to a qualitative review offering a comprehensive and balanced synopsis of the studies previously undertaken and themes used to form a background to the study (Gray et al., 2017). In qualitative approaches such as phenomenology and grounded theory, the literature should be presented to support and explain the findings.

Research Question: Not all qualitative studies include a research question, but when it is present it is usually a lot broader and vaguer than a quantitative research question (Gray et al., 2017). If one is stated it should reflect the research problem/phenomenon of interest.

Methodology and Philosophical Underpinning: The researcher should indicate why the qualitative paradigm and the particular approach were chosen. The philosophical underpinnings of the approach should also be presented. These are important as they identify how the research process should proceed, for example how participants should be selected, how data should be gathered and how analysis should be undertaken. Different qualitative methodologies have different philosophies which are often not compatible with each other, so selecting elements of different approaches and mix and matching (method slurring) is not generally recommended. Nepal (2010) and Morse (2009) argue there are exceptions to this, for instance when the research question cannot be fully addressed unless two qualitative methods are used. However, these methods should be clearly identified from the outset of the study and include a rationale as to why this mixed methods approach is justified (Morse, 2009; Nepal, 2010).

Sample: When selecting a sample for a qualitative study, the researcher should attempt to ensure that the participants have experience of the phenomenon under investigation. This type of sampling, known as purposive or purposeful sampling, ensures a breadth and depth of data on the phenomenon. In grounded theory as themes emerge the researcher may select participants with experience related to those themes. This type of selection is known as theoretical sampling. Convenience samples are also used in some qualitative studies.

Samples used in qualitative research are non-probability as there is no desire to select a representative sample. Instead the researcher seeks to generate an in-depth knowledge of the phenomenon that reflects the participants' experiences. Samples are also usually small in size. The researcher's hope is to ideally achieve data saturation – that is a point where the inclusion of further participants will not lead to any new data. Data saturation should be the true determinant of a qualitative sample size, however this is rarely achievable in small qualitative studies.

Ethical Considerations: The ethical principles and moral codes that apply in qualitative research are similar to those in quantitative studies, as is the process of ethical approval for the research. Some areas need further consideration within qualitative studies. Data gathering in the qualitative paradigm often involves in-depth interviews during which participants can often inadvertently reveal information that they had not planned to discuss, or the interview may raise topics that trigger uncomfortable or forgotten experiences. Consequently, participants may not feel happy or comfortable continuing with the interview. 'Process consent' is a method of continuously checking with participants to ensure that they are happy to continue with the interview or if they wish to discontinue. The principle of non-maleficence also has a role here, as the unresolved grief or other issues that may have arisen during the interview can have a negative emotional effect on the participant. In anticipation of such an event the researcher should have some form of psychological support available for participants.

Confidentiality is another ethical issue that needs consideration. The most common methods of data gathering are interview and observation, and as a result the participant is known to the researcher and therefore cannot be anonymous, so the onus is on the researcher not to inadvertently include information in a theme through which the participant might be identified. This also applies in the presentation of raw data to support the themes that emerge.

Data Collection and Analysis: There are a number of different methods of data collection available to researchers undertaking a qualitative study. The most common of these are individual interview (semi-structured and unstructured), focus groups and participant observation. The method of data collection should however be compatible with the methodology selected and the researcher should justify why that method was selected.

In qualitative research, data collection and analysis occur concurrently. Depending on the methodology adopted there are specific steps that the researcher is expected to take when analysing the data. Sometimes there are instruments available to aid this process; however, the instrument should be compatible with the given philosophy. To this end, the researcher needs to explain the rationale for selecting the instrument and discuss how it was used to analyse the raw data in order to arrive at the final themes.

Rigour: The researcher is expected to demonstrate to the reader that steps have been taken to ensure the trustworthiness of the analytical process. The most common criteria used to evaluate rigour are *credibility*, *dependability*, *transferability* and *confirmability* (Morse, 2015). Credibility attempts to establish how accurate the researcher is when representing the participants' experiences. One method of attempting to ensure credibility is through prolonged interaction and developing a good rapport so as to ensure rich data. Member checking – asking participants to review the results of the study to see if they are consistent with their experiences – is another method of ensuring the accuracy of the analysis (Streubert and Carpenter, 2011). Morse (2015) states however that the latter is a strategy to avoid, as it could create a dilemma for the researcher who has to manage a situation where the participant does not confirm the accuracy of the analysis or seeks to have it amended.

Dependability can't exist without credibility, so the latter is an essential part of this criterion. Triangulation or overlapping of methods can help to establish dependability (Streubert and Carpenter, 2011).

Transferability, also known as applicability or fittingness, is based on the degree to which the study's findings fit into other situations that are outside the context of the study. It is said to be present when readers can apply the study's results to their own experiences or when the findings are applicable to others not involved in the study. Morse (2015) states that an in-depth description of the findings is necessary for a reader to fit the original findings to a different setting.

Finally, confirmability is about offering a clear demonstration of how interpretations were made and conclusions were drawn, and that they were not simply conceived by the researcher (Polit and Beck, 2017). A clear audit trail would offer a reader an opportunity to confirm the legitimacy of the findings of the study.

Findings/Discussion: There are a number of different ways in which the findings of a qualitative research study can be presented depending on the approach selected. However, the findings should be presented clearly and supported with extracts from the data gathered. The findings should be discussed with regard to what is known about the topic, and depending on the approach a further review of the literature may have been undertaken to achieve this. The findings should also be related back to the purpose of the study or research question and the discussion should indicate if these have been satisfactorily addressed within the study.

Conclusions/Implications/Recommendations: The results of a study should add to the existing body of knowledge on that topic. It is expected the researcher will conclude by identifying how this study is likely to do this and what implications these findings may have for clinical practice. The researcher should also state how the findings might be further developed and/or identify other related areas which arose during the study that need further investigation.

References: As in quantitative research all works referred to in the study should be accurately referenced.

Identifying the Strengths and Limitations of a Study

Critically appraising a research study is not simply recognising the strengths or limitations of the research, but also identifying for the reader how that strength or limitation could have influenced the outcomes of the study. When identifying the strengths and limitations and the implications of these, it is crucial to remember that the appraisal is objective, so therefore this analysis should be supported by evidence from the literature. An appraisal of a research study using some of the factors identified in a critiquing tool can be seen in Box 5.3.

There is no such thing as the perfect study, so all studies will have limitations. What is expected is that researchers recognise and acknowledge the limitations within their own work.

Box 5.3 Critical Appraisal of a Research Study

'Factors influencing self-management behaviours among patients with type 2 diabetes mellitus in the Solomon Islands' (Bezo et al., 2020: 854).

Aims

This study aimed to explore the current state of self-management behaviours among patients with T2DM in the Solomon Islands and to discuss these factors influencing the behaviours.

Design

This cross-sectional study collected data using three questionnaires ... given to study participants in Honiara, Sl. ... The data collection commenced in August and completed in September 2017. The self-report questionnaires took participants between 30–50 min to complete.

Participants

A convenience sample of 150 adult patients with T2DM was recruited from a diabetic centre in a hospital in Honiara, Sl. Of the 150 participants, only 140 were valid. The other 10 were rejected due to incomplete and unreadable entries. Inclusion criteria were as follows: adult patients diagnosed and living with T2DM for more than one year; between 20–75 years old; free from cognitive impairments and mental disorders; able to read and communicate in local Pijin or English; and willing to participate. The exclusion criteria were as follows: hospitalised T2DM patients with major complications or other life-threatening conditions; developmentally disabled or mentally ill; newly diagnosed with T2DM and being illiterate. A total of 140 participants completed the study.

Data Collection

The demographic data that were collected for this study included age, gender, race, marital status, education level, occupation, income, duration of diabetes, smoking status and physical activity. The physical activity mentioned previously means doing exercise for at least 30 min a day.

Ethical Considerations

Approval to conduct the study was granted by the local ethics committee ... and the participating hospital. After having explained the study purpose, the consent was attained from those who both met the inclusion criteria and [were] willing to participate.

(Bezo et al., 2020: 854)

Limitations

This study was potentially affected by several limitations. Firstly, the participants were drawn from a diabetic clinic in an urban centre of the capital city of SI, which may introduce demographic biases and prevent the generalisation of the results to the entire country. Secondly, the self-report method used for questionnaires may introduce overestimation/underestimation biases. Finally, future studies should incorporate larger and more representative samples, explore differences within groups (urban and rural), and consider exploring other underlying factors that may enhance or inhibit the effectiveness of DSM.

(Bezo et al., 2020: 860)

Critical Appraisal

In Bezo et al.'s (2020) study the researchers identify that they used convenience sampling to select their sample. Polit and Beck (2017) state that convenience sampling is a form of non-probability sampling, where those who are easily accessible to the researcher are selected, and therefore the findings may not be representative of the population. The participants in this study were all drawn from a diabetic centre in one hospital in the Solomon Islands. Homogeneity, where individuals all share a similar environment, can have the effect of limiting the results to the subjects in the study (Polit and Beck, 2017). Thus, overall the findings of this study need to be read with caution if attempting to generalise the results. Bezo et al. (2020) used self-reports to gather participant information. Polit and Beck (2017) advise that there can be difficulties in relation to the accuracy of self-reports as people generally like to be seen in the best possible way, so what individuals state they do and what they actually do can differ. The researchers acknowledged these limitations of their study.

Recommendations for Future Studies

Having critically appraised a study and presented the implications of its strengths and limitations, the next step is to consider how these strengths might be enhanced and any limitations overcome. The author may have made suggestions for future studies or identified gaps in the literature. In the case of Bezo et al. (2020) they suggest 'Finally, future studies should incorporate larger and more representative samples, explore differences within groups (urban and rural), and consider exploring other underlying factors that may enhance or inhibit the effectiveness of DSM' (Bezo et al., 2020: 860).

Recommendations for future research or gaps in the literature may help the reviewer to develop a research question, especially where the review is part of a research study.

Overall Evaluation of the Study

Having critically appraised the study and considered the implications that any strengths or weaknesses may have for the outcomes of the study, the next step is to evaluate the study. This is about determining whether this study was undertaken in a sufficiently robust and trustworthy manner, and if its outcomes are significant enough to have an impact on professional knowledge and practice. While no single study should ever change practice, a study that is methodically robust can stimulate debate and ultimately influence knowledge and practice.

Critically Appraising Mixed Methods Research

For some research problems, neither quantitative nor qualitative approaches alone can answer the research question. In these cases, researchers have sometimes opted for a methodology known as ‘mixed methods’ where they combine and integrate methods from qualitative and quantitative into one study (Gray et al., 2017). Critically appraising mixed methods studies is more than simply just appraising the quantitative and qualitative elements of the study. Issues such as why a mixed methods approach was chosen and how the methods were integrated need to be addressed also. A tool to appraise a mixed methods study is presented in Table 5.4.

Table 5.4 Issues that influence the robustness of a mixed methods study

Issues that influence the robustness of a mixed methods study	
Rationale for using a mixed methods approach	Has a clear rationale been proposed for using a mixed methods approach? Does the research benefit from this approach?
Philosophical approach underpinning the study	Is the philosophical approach (or approaches) identified?
Research design	Has a mixed methods design been used? Does the research design reflect an established mixed methods design? Is the timing, dominance and mixing of methods discussed?
Trustworthiness	Has the rigour of the qualitative phase been appropriately tested and discussed? Has the validity and reliability of the quantitative phase been appropriately tested and discussed?

Issues that influence the robustness of a mixed methods study

Connectedness	<p>Does the study demonstrate a cohesiveness that is congruent with a mixed methods study?</p> <p>Is there a clear relationship between the overall problem, purpose, and research questions in both phases of the study?</p> <p>Is there a clear relationship between the research questions, data collection, analysis and conclusions in both phases of the study?</p>
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(Source: Adapted from MacInnes, 2009)

Rationale for Using a Mixed Methods Approach: The author should offer a reason for selecting a mixed methods approach. One reason may be that using both qualitative and quantitative methods offers a more complete approach balancing the numerical and articulated data that comes separately from both methods. Triangulation of data from qualitative and quantitative methods can add to the validity of the study findings. Also, a mixed methods approach may be the most pragmatic approach to undertaking the research (Polit and Beck, 2017).

Philosophical Approach Underpinning the Study: In relation to the philosophical approach the author should identify which paradigms (e.g. positivist and interpretive) were used, and when and how they were used within the study. Some authors may opt to use pragmatism or the pragmatic paradigm. Those who use this paradigm regard the research question as central to the study and the methods they use as of lesser importance so long as they generate the required data (Polit and Beck, 2017).

Research Design: Mixed methods designs can be ‘fixed’ or ‘emergent’ (Creswell and Plano Clark, 2018). Fixed designs are planned from the outset of the research with the qualitative and quantitative methods planned in advance. Emergent designs usually develop while the research is being conducted and usually as a result of the researchers recognising that the qualitative or quantitative approach that was being used could not answer the research question adequately (Creswell and Plano Clark, 2018). In some instances, fixed designs can become emergent as the planned two-phase study is altered and a modified second phase is substituted as a result of the data that arises in the first phase (Creswell and Plano Clark, 2018). There are numerous types of mixed methods research design, of which the main three are the convergent parallel design, the explanatory sequential design and the exploratory sequential design (Polit and Beck, 2017).

Convergent Parallel Design: This design is also commonly known as triangulation. The aim is to collect and analyse quantitative and qualitative data concurrently and then merge to identify the similarities and differences to get a clearer understanding of the results.

Explanatory Sequential Design: This design uses quantitative and qualitative data collection in that sequence. The dominant weighting can be given to either phase but is most commonly given to the quantitative phase. In this design, the research problem should have a greater alignment with the quantitative paradigm. There should be sufficient opportunity for the researcher to return to the participants to collect the qualitative data and time to undertake the research sequentially (Creswell and Plano Clark, 2018).

Exploratory Sequential Design: This design is similar to the explanatory design, but the sequence is reversed with the qualitative phase completed first followed by the quantitative phase. The dominant weighting can be given to either phase, but is most commonly given to the qualitative phase. It is grounded in the assumption that there is no quantitative instrument available and one needs to be developed or that there is no theoretical framework available that underpins research into this phenomenon (Polit and Beck, 2017).

Trustworthiness: As mixed methods studies are a combination of both quantitative and qualitative research it is important that the quality of both phases is tested and presented. Testing for validity and reliability and rigour has been discussed earlier in this chapter.

Connectedness: This issue looks to ensure that there is a connection between the different phases of the research. There should be congruence between the purpose of the research, the research question, data collection, data analysis and conclusions, and the dominant paradigm, which should be clearly identified.

Critically Appraising Systematic Reviews

A systematic review is different to the conventional narrative literature review in that it is considered to be scientific inquiry in its own right (Polit and Beck, 2017). Similar to the traditional review of the literature, it identifies and selects research studies related to a topic of interest. However, it is the predefined protocol and the systematic manner in which studies are selected and managed that differentiates it from a narrative review. Systematic reviews are expected to be transparent and clearly describe, ideally in advance, the way in which studies will be searched, selected and evaluated (Bettany-Saltikov and McSherry, 2016). Through the inclusion of all the studies related to a specific topic, the risk of bias is reduced as studies with divergent views are also presented. Both published and unpublished works should be included within a systematic review, as studies that may be important may not have been accepted for publication because their results were not deemed statistically significant or the outcome was regarded as unfavourable. Reviewers in a systematic review are expected to systematically search for all studies, published

and unpublished, in order to present the most accurate and unbiased overview of the research (Bettany-Saltikov and McSherry, 2016). Depending on the type of data gathered, the reviewer in a systematic review may present evidence as a narrative integration if statistical tests are inappropriate, or may statistically integrate the evidence using meta-analysis for quantitative data and meta-synthesis for qualitative data (Polit and Beck, 2017).

Questions Related to Integrity in Systematic Reviews

Instruments for appraising systematic reviews are now appearing more commonly in textbooks and journals. The principles that underpin these instruments are similar. Issues that can influence the robustness of a systematic review are presented in Table 5.5.

Table 5.5 Issues that affect the robustness of a systematic review

Issues that influence the robustness of a systematic review	
Research problem and research question	The research problem and question should be clearly identified. Any terminology, concepts or phenomena identified should be clearly defined by the reviewers. The implications of this review for the profession should be identified
Search strategy and study screening	The search strategy used should be clearly identified. The databases and keywords that were used should be identified, as should the combinations of keywords and the use of Boolean operators. The inclusion and exclusion criteria that were applied to the studies should be clearly stated and appropriately applied in a fair and consistent manner. An attempt should have been made to secure missing data from the original authors rather than simply excluding a study. Any studies that were excluded should be identified along with a rationale for the exclusion
Quality appraisal	The reviewers should have appraised the quality of the studies selected. In doing so they may have used a recognised instrument or developed their own. The appraisal instrument should be appropriate for the task. It is preferable if at least two reviewers appraise the studies independently and compare results
Combining and summarising the data	The reviewers should have clearly identified how the evidence gathered would be combined and summarised. The quality of the studies should be suitable for the analysis they used. Meta-analysis: The effects of heterogeneity should have been discussed. The reviewer should offer a rationale for the selection of a fixed or random effects model. Meta-synthesis: The reviewers should have discussed how the data was managed. There should have been sufficient data presented to support the reviewers' findings

(Continued)

Table 5.5 (Continued)

Issues that influence the robustness of a systematic review	
Conclusions	There should be a sufficient quantity of robust studies to adequately support the conclusion drawn. The reviewers should have identified and discussed the limitations of their review and the overall strength of the outcome. The reviewers should have identified the implications for clinical practice and made recommendations for further research
References	All the studies and other works referred to in the review should be correctly referenced

Research Problem and Research Question

In a systematic review the research problem is identified and the research question is posed at the outset of the review. These should both be clearly stated so as to leave no ambiguity as to what is being investigated. Any terms or concepts that are used to describe or discuss the problem or question should be defined to further assist the reader in this regard. The reviewers should also identify why this review is being undertaken and why it is important to the profession.

Search Strategy and Study Screening

Systematic reviewers are expected to undertake an exhaustive, meticulous review of the literature, and how this is accomplished can offer a good insight into the robustness of the review. The reviewers should use as many alternative search strategies as possible when undertaking the search to ensure inclusivity. The databases and other data sources that were accessed should be clearly identified for the reader, as should the keywords and keyword combinations that were used. Strategies to access the grey literature should also be identified.

The inclusion and exclusion criteria need to be clearly identified at the beginning of the review, and the reviewers should offer sound rationales for these criteria. Reasons for exclusion can include non-conformity with the selected study design or the age of a study. However, caution needs to be taken so that exclusion criteria do not exclude a seminal study simply because it is, for example, in a different language. Missing data should not be an exclusion criterion without the reviewers first attempting to locate this information.

Quality Appraisal

There are instruments available to assess the quality of studies for a systematic review, for example the CASP checklist for systematic reviews (CASP, 2018).

However, Clarke (2006) recommends that reviewers should identify what they consider to be the key components of quality for their review and develop their own guidelines, and then evaluate and describe each study on that basis. Ideally, two or more reviewers should independently appraise the studies, using the agreed guidelines. The higher the degree of inter-rater agreement, the more reliable the appraisal is deemed to be.

Combining and Summarising the Data

The reviewers need to clearly state how they plan to combine and present the data. The data may be presented using narrative integration (synthesis), meta-analysis or meta-synthesis (Polit and Beck, 2017). Narrative integration, which involves discussing the data and the studies rather than undertaking statistical analysis, is usually used when there are multiple disparities (heterogeneity) between the studies that preclude meta-analysis (Whittaker and Williamson, 2020). The rationale for using this approach should be clearly stated by the reviewers (Polit and Beck, 2017). In meta-analysis the general rule is that studies should be individually analysed and then the individual statistical results combined. Heterogeneity can be managed through using either a fixed or random effects model (see Chapter 6 for additional detail on these models). Both models have their strengths and limitations (Whittaker and Williamson, 2020), so a clear rationale for selecting either should be given.

Meta-synthesis is used to combine the data in qualitative systematic reviews. The results are either described or, more frequently, interpreted as the reviewers integrate and seek to identify new insights into and greater understanding of the phenomenon. In doing so the reviewers should identify how they compared and interpreted the data. Any interpretations made should also be clearly supported by the data. In some situations, systematic reviews use a mixed methodology approach using both qualitative and quantitative studies. Analysis in such situations is possible but is more complex (Whittaker and Williamson, 2020).

Conclusions

The reviewers should identify and discuss their conclusions and any inconsistencies between studies in the review. They should also discuss the strengths and limitations of their review, for instance how closely they adhered to the criteria they set for screening and selecting studies. All studies have limitations, and studies in which the reviewers are aware of and identify their own weaknesses are more likely to be trustworthy. As with any research study, systematic reviews, in adding to the body of knowledge, often discover other areas that warrant further study or review, and the authors should identify these to the reader.

References

As in all studies, all included works should be correctly referenced for the benefit of the reader.

Critically Appraising Non-Research Literature

While the majority of the literature presented and appraised within a review will be from research studies or systematic reviews, some supporting information may come from the theoretical, philosophical, practice or policy literature. This supporting information should also be critically appraised. A useful instrument for analysing practice and policy literature is the Appraisal of Guidelines for Research and Evaluation II (AGREE II, 2017) available at: www.agreetrust.org.

Another helpful tool for critically analysing non-research literature is presented by Hek and Langton (2000). This instrument focuses on the perceived accuracy, trustworthiness and quality of the paper being reviewed. The use of this tool does require a reasonable knowledge of the subject area. Hek and Langton (2000: 51) acknowledge that the appraisal in their review was performed by 'subject knowledgeable' reviewers. An adaptation of Hek and Langton's (2000) instrument is displayed in Table 5.6.

Table 5.6 Appraising non-research literature

Issues that influence the robustness of non-research literature	
Purpose and relevance	The aim of the article should be clearly identified and should be congruent with the purpose of the review
Credibility	The article should be presented in a clear and organised manner. It should be easy to read and understand, and grammatically correct. It should avoid excessive use of jargon and should appear credible at first glance
Peer review	Preferably the article should have been published in a peer-reviewed journal
Supporting evidence	The author ideally should have experience and/or qualifications that suggest a knowledge or expertise in this particular field of enquiry
Accuracy and reliability	The information presented in the article should be accurate and congruent with the literature and what is known about the phenomenon. What the author suggests should be supported by what is known of the phenomenon

(Source: Adapted from Hek and Langton, 2000)

Summary

The purpose of this chapter was to introduce the novice reviewer to the concept of critically appraising the literature. A literature review can consist of a large number of studies, and these need to be presented in an organised manner for the benefit of the reader. Studies with findings reflecting similar issues are thus identified and grouped together under themes so that the reader can consider the different perspectives and implications.

For the reader to make an informed judgement on the implications of a study, it needs to be presented in such a way that they can recognise how robust the findings of that study are. The reviewer has to be able to present the reader with both the findings and a critical appraisal of the study in a succinct but also in an objective manner. As a result, it is not usually possible to present more than one or possibly two of the issues that influence the robustness of a study when critically appraising it. In critically appraising a study the reviewer can remain objective by using research texts or articles to support the appraisal. It is also important to remember that strengths are as important as limitations, and only seeking the latter could be regarded as criticising someone's work rather than appraising it.

The next step after appraisal is synthesis – that is, the combining of data from a number of studies to create new insights or perspectives. Synthesis is the focus of the next chapter.

Key Points

- Reading and critically appraising literature should go hand in hand.
- Appraisal is about identifying the strengths and/or limitations of a study or report; it is not about criticising the authors or their work.
- Appraisal should be undertaken in an objective manner and supported by appropriate texts and literature.
- There are a variety of different instruments available to help you appraise the different types of studies and literature.

Further Reading

Critical Appraisal Skills Programme (CASP) (2018) CASP Checklists. Available at: <https://casp-uk.net/casp-tools-checklists/> (accessed: 19 November 2019).

This website offers a number of tools for critical analysis of different types of studies including systematic reviews, randomised control trials and qualitative studies. The tools can be downloaded or printed and are free to use.



Scottish Intercollegiate Guidelines Network (SIGN) (2019) Critical Appraisal Notes and Checklists. Available at: www.sign.ac.uk/checklists-and-notes.html (accessed: 19 November 2019).

This website has a number of free appraisal tools, including tools for systematic reviews, cohort studies and randomised control trials. There are accompanying notes to clarify the questions on the checklist.