National Institute for Health and Care Excellence

Final

Tinnitus: assessment and management

[B] Evidence review for patient information

NICE guideline NG155

Qualitative evidence review

March 2020

Final

This evidence review was developed by the National Guideline Centre

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1.1 What information should be provided to people with tinnitus, including self-management strategies?

1.2 Introduction

Information and advice on the causes of tinnitus and the range of interventions to successfully manage tinnitus, including self-management, may not be easy to access in an appropriate format for all people with tinnitus and their carers. On the whole, the general public has poor knowledge of tinnitus, and in particular people with tinnitus and their families and carers have a need for more information to help them cope with the condition.

Those with tinnitus are sometimes given inaccurate or unhelpful information, which can have a negative impact on their ability to live well with tinnitus. Those who seek support also may not be given the information they need in order to make informed choices about the possible interventions appropriate for them or the information might not be tailored to their specific needs. Early provision of relevant information may help the person manage tinnitus better and prevent tinnitus from being intractable and/or distressing.

Provision of information and support is inconsistent throughout the UK. Healthcare professionals may provide information and advice but this is not universally available or standardised.

This review was carried out to inform recommendations about the information and advice needs of people with tinnitus and their families and carers. This information can help them adjust to having tinnitus and learn to manage it either through self-management or accessing further interventions.

Appropriate and relevant information is an integral part of support and a review on support for people with tinnitus (sometimes known as counselling) can be found in evidence review A.

1.3 Characteristics table

For full details see the review protocol in appendix A.

Table 1: Characteristics of review question

Objective	To determine what information should be provided to people with tinnitus including: ○ Information about diagnosis and symptoms ○ Role of reassurance ○ Self-management strategies ○ Support groups and other sources of information; signposting to other websites
Population and setting	Children, young people and adults with tinnitus Parents and carers. Strata • Children and young people (up to 18 years) • Adults

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Context	Themes will be derived from the evidence identified for this review and not pre-specified. However for information to guide the technical team, relevant themes may include: • Information about: ○ Causes ○ Symptoms ○ Diagnosis ○ Prognosis ○ Treatment options (including self-management) ○ Self-help and coping strategies ○ Where to go for further support (links, further reading, support groups etc.)
Review strategy	• Synthesis of qualitative research - qualitative interview and focus group studies (including studies using grounded theory, phenomenology or other appropriate qualitative approaches) • Results presented in narrative format • Quality of the evidence will be assessed by a GRADE CERQual approach for each review finding

1.4 Qualitative evidence

1.4.1 Included studies

Three qualitative studies were included in the review; [6, 9, 13] this is summarised in Table 2 below. Key findings from this study are summarised in Section 1.4.2 below. See also the study selection flow chart in appendix C, study evidence tables in appendix D, and excluded studies lists in appendix F.

1.4.2 Excluded studies

See the excluded studies list in appendix F.

1.4.3 Summary of qualitative studies included in the evidence review

Table 2: Summary of studies included in the review

Study	Design	Population	Research aim	Comments
Ming 2018[6]	Group interviews (semi-structured) with thematic analysis	n=7 Adults experiencing tinnitus who could read and converse in English New Zealand	Evaluate a tinnitus brochure to establish its readability and suitability for providing information to adults who experience tinnitus	Group interviews were used for “learner verification” for the developed brochure
Pryce 2018[9]	Interviews (in-depth) with grounded theory analysis	n=41 Individuals who had sought help for tinnitus UK	Elicit patient preferences for tinnitus care and the key information that patients required to make decisions about clinical care	Mixed methods study – a literature review was conducted alongside qualitative research.
Thompson 2011[13]	Interview (format not reported) with grounded theory analysis	n=8 Purposefully selected tinnitus participants: four who had attended group tinnitus management sessions and four who had attended individual tinnitus management sessions UK	Investigate in detail the experience of participating in a tinnitus therapy group and of adjusting to tinnitus	Research aim does not directly match the objective of this review question

See appendix D for full evidence tables.

1.4.4 Qualitative evidence synthesis

Table 3: Review findings

Main findings	Statement of finding
Information should be provided to improve understanding of tinnitus	Participants sought information to develop the identity of their tinnitus and searched for answers
Information should be provided about what causes changes in tinnitus	Participant wanted to know how to prevent tinnitus and what factors influenced their tinnitus, including eating habits and working habits
Information should be provided about management options for tinnitus	Participants wanted information about the impact of management options for tinnitus and how to access them
Information should be tailored to the person's needs (e.g. visual with verbal explanations)	Participant received a diagram of the ear with a verbal explanation, helped understanding of tinnitus and provided reassurance

1.4.4.1 Narrative summary of review findings

Review finding 1: Information should be provided to improve understanding of tinnitus

Participants aimed to develop an understanding of their tinnitus and searched for answers about their tinnitus.

Explanation of quality assessment: there were moderate concerns about methodological limitations as the interview format was not described and the nature of the relationship between the interviewer and participants was also not described; concerns about coherence were not applicable as one study informed this review finding; there were moderate concerns about relevance as aim of the study was not to explore what information should be provided to people with tinnitus; there were minor concerns about adequacy – this was based on the overall assessment of the richness of the data and quantity of data. Whilst only one study contributed to this finding, this assessment indicated that there was sufficient richness in the data to inform this relatively descriptive finding.

Review finding 2: Information about what causes changes in tinnitus needed

Participants wanted information about changes in tinnitus and if anything can be done to improve the noise - "How does it fluctuate, the noise in my ear?...we look eating habits, drinking habits, working habits, but it's the same all the time…". Additionally, when participants were asked about the content of a tinnitus brochure, they responded that they wanted information about how tinnitus symptoms can be prevented.

Explanation of quality assessment: there were moderate concerns about methodological limitations as the interview format was not described and the nature of the relationship between the interviewer and participants was also not described; there were minor concerns about coherence; there were moderate concerns about relevance as the aim of the study was not to explore what information should be provided to people with tinnitus; there were moderate concerns about adequacy – this was based on the overall assessment of the richness of the data and quantity of data. This assessment indicated that was insufficient information to explore the finding further (the review finding was supported by one quote per study), it was however noted that the finding is relatively descriptive.

Review finding 3: Information should be provided about management options for tinnitus

Participants wanted information about the impact of different tinnitus management options (e.g. "talking therapies, sound therapy, group support"), on tinnitus symptoms and the process of accessing management options. One participant in the study shared "…I made an appointment to go and see (a private ENT consultant), I was just thinking, there must be something they can do…". Another participant shared that they visited a doctor and was told "…there is a box they can fit you with…to make it go away" and the participant desired to find out about techniques to help their tinnitus.

Explanation of quality assessment: there were moderate concerns about methodological limitations due to limited details about sampling methods and the nature of the relationship between the interviewer and participants was also not described; there were minor concerns about coherence; there were moderate concerns about relevance; there were moderate concerns about adequacy – this was based on the overall assessment of the richness of the data and quantity of data. This assessment indicated that was insufficient information to explore the finding further (one study did not provide supportive quotes), it was however noted that the finding is relatively descriptive.

Review finding 4: Information should be tailored to the person's needs (e.g. visual with verbal explanations)

Participant found that a diagram helped with understanding their tinnitus and valued the explanation given to them, providing reassurance. One participant shared that "She gave me a good diagram of the ear and explained exactly what happened to me…because she helped me understand it, it probably reduced the annoyance".

Explanation of quality assessment: there were moderate concerns about methodological limitations as the interview format was not described and the nature of the relationship between the interviewer and participants was also not described; concerns about coherence were not applicable as one study informed this review finding; there were moderate concerns about relevance as the aim of the study was not to explore what information should be provided to people with tinnitus; there were moderate concerns about adequacy – this was based on the overall assessment of the richness of the data and quantity of data. This assessment indicated that was insufficient information to explore the finding further (the review finding was supported by one quote), it was however noted that the finding is relatively descriptive.

Table 4: Summary of evidence

Study design and sample size			**Quality assessment**		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
Information should be provided to improve understanding of tinnitus					
1 study	Interviews	Participants sought information to develop the identity of their tinnitus and searched for answers	Limitations	Moderate concerns about methodological limitations	LOW
			Coherence	Not applicable	
			Relevance	Moderate concerns about relevance	
			Adequacy	Minor concerns about adequacy	
Information about what causes changes in tinnitus needed					
2 studies	Interviews	Participant wanted to know how to prevent tinnitus and what factors influenced their tinnitus, including eating habits and working habits	Limitations	Moderate concerns about methodological limitations	LOW
			Coherence	Minor concerns about coherence	
			Relevance	Moderate concerns about relevance	
			Adequacy	Moderate concerns about adequacy	
Information should be provided about management options for tinnitus					
2 studies	Interviews	Participants wanted information about the impact of management options for tinnitus and how to access management options	Limitations	Moderate concerns about methodological limitations	LOW

Study design and sample size			Quality assessment		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
			Coherence	Minor concerns about coherence	
			Relevance	Moderate concerns about relevance	
			Adequacy	Minor concerns about adequacy	
Information should be tailored to the person’s needs (e.g. visual with verbal explanations)					
1 study	Interviews	Participant received a diagram of the ear with a verbal explanation, helped with understanding of tinnitus and provided reassurance	Limitations	Moderate concerns about methodological limitations	LOW
			Coherence	Not applicable	
			Relevance	Moderate concerns about relevance	
			Adequacy	Moderate concerns about adequacy	

1.5 Economic evidence

1.5.1 Included studies

The committee agreed that health economic studies would not be relevant to this review question, and so health economic evidence relating to this question was not sought.

1.6 Evidence statements

1.6.1 Qualitative evidence statements

- **Review finding 1: Information should be provided to improve understanding of tinnitus**

  Low quality evidence from one study (n=8) informed this review finding. There were concerns about methodological limitations and relevance. The evidence suggested that information should be provided to people with tinnitus to improve their understanding of tinnitus and consequently impact how their tinnitus impacts their daily lives

- **Review finding 2: Information should be provided about what causes changes in tinnitus**

  Low quality evidence from two studies (n=15) informed this review finding. There were concerns about methodological limitation, relevance and adequacy. The evidence suggested that people with tinnitus would like information about what causes changes in their tinnitus, in particular if any lifestyle habits can improve or worsen their tinnitus.

- **Review finding 3: Information should be provided about management options for tinnitus**

  Low quality evidence from two studies (n=49) informed this review finding. There were concerns about methodological limitations and relevance. The evidence suggested that people with tinnitus want to be provided with information about the various management options available to them and how they can be accessed. Additionally, people with tinnitus would like to be provided with information about the impact that different management options can have on their symptoms.

- **Review finding 4: Information should be tailored to the person's needs (e.g. visual with verbal explanations)**

  Low quality evidence from one study (n=8) informed this review finding. There were concerns about methodological limitations, relevance and adequacy. The evidence suggested that the use of visual and verbal explanations by healthcare professional when providing information to people with tinnitus can improve tinnitus outcomes and provide reassurance.

1.6.2 Health economic evidence statements

No relevant economic evaluations were identified.

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1.7 The committee's discussion of the evidence

1.7.1 Interpreting the evidence

1.7.1.1 The quality of the evidence

The review had 4 main findings:

1. Information should be provided to improve understanding of tinnitus
2. Information should be provided about what causes changes in tinnitus
3. Information should be provided about management options for tinnitus
4. Information should be tailored to the person's needs (e.g. visual with verbal explanations)

Across the review findings there were moderate concerns about methodological limitations due to a lack of information about: the nature of the relationship between the interviewers and participants, the format of the interviews and the sampling methods used.

As a result of the low number of qualitative studies, coherence was not applicable for two of the review findings. Two review findings were informed by two studies and there were minor concerns about coherence.

For all of the review findings there were moderate concerns about relevance as the aims of the studies did not directly match the aim of this evidence review. The aim of one study which informed the third review finding was more relevant to this evidence review, compared to the other two included studies.

The quantity of the supporting quotes and richness of the data (in terms of the amount of detail provided within studies to gain an understanding of people's experiences) varied across the review findings, consequently the concerns for adequacy ranged from minor to moderate.

The overall assessments of confidence for the review findings were low.

1.7.1.2 Findings identified in the evidence synthesis

This review included three qualitative studies which found that information is important to people experiencing tinnitus. There is limited information about "what" information provision should consist of with one study reporting that it should include information about what could improve or worsen tinnitus. Lay representatives on the committee shared that many people find that tinnitus fluctuates over time. There is the understanding that factors such as stress, anxiety and a cold can cause tinnitus to become more noticeable (this is usually temporary). Furthermore, two qualitative studies reported that information should be provided about the management options available for people with tinnitus in order to aid decision making. One of these studies also reported that people wanted information about how the management options can be accessed.

The committee made a consensus recommendation about the importance of reassurance for people. They considered that it was crucial that in discussions with people with tinnitus, the healthcare professional should try to explore their experience of tinnitus and reassure people who have no symptoms requiring urgent onward referral regarding outlook. It should be discussed that tinnitus is commonly associated with hearing loss but it is not commonly associated with other underying physical problems. The committee noted that damage can be caused not just by the provision of unhelpful information but also by the absence of information. People may be frightened or anxious and should not be left to draw their own conclusions about the cause and future severity of their tinnitus.

The committee made a recommendation about the factors that should be discussed when giving information about tinnitus to people with tinnitus, family members or carers, based on clinical experiences, feedback from the lay representatives and the results of the qualitative review. The committee hope that providing a list of topics to include as part of the recommendation would encourage healthcare professionals to have a more focused and informative approach when providing information. The committee made this a strong “offer” recommendation because they believe that providing information is an essential part of patient care.

The committee acknowledged that there were no findings about the timing of the provision of information but currently the provision of information is often inadequate across the clinical pathway. The committee made a consensus recommendation that people experiencing tinnitus should receive information about tinnitus at all stages of care. The provision of information particulary at the person’s first point of contact with a healthcare setting, e.g. general practice, is crucial. Extreme distress or catastrophic thinking at the onset of tinnitus can influence patient outcomes and the potential impact of this can be minimised by providing people with tinnitus helpful information as early as possible.

The committee noted that one of the findings for this review indicated that ‘information should be tailored to the person’s needs (e.g. visual with verbal explanations)’. The committee collectively agreed that using a tailored approach to present information in a variety of formats (e.g. verbal consultation and written information) would be good practice. The tailoring of information should be based on individual needs, i.e. children should receive child-friendly explanations and resources. Parents, guardians or carers should also be provided with tailored information. Other considerations should include people who suffer from hearing loss or those with cognitive and visual impairments.

In summary, three qualitative studies were included in this evidence review which provided some insight into the views that people with tinnitus have in regards to the provision of information. The recommendations made by the committee were mainly consensus-based. Strong recommendations were made as patient information should be an essential part of the patient experience. The committee believed that reassuring people about tinnitus and providing accessible information at first point of contact with a healthcare professional can improve patient outcomes.

1.7.2 Cost effectiveness and resource use

Cost effectiveness evidence was not sought as this was a qualitative review. The recommendations provide guidance regarding the content of information and support required for people with tinnitus. This in line with the general principles of provision of information already established in the existing NICE Patient experience guideline (CG138). The recommendations were not considered likely to have a substantial resource impact over and above CG138.

1.7.3 Other factors the committee took into account

Current practice is variable and this will be a change in practice for some settings. In some areas people with tinnitus are not offered any information. The committee noted that many settings will need to assess and expand the information they give. Information given has the potential to reassure or cause the person further distress and so it is very important to get the tone and message right from the outset. The committee also hope that the recommendations will lead to more consideration about the impact of information particularly at initial consultations in general practice.

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Lay representatives felt that people with tinnitus need information at every stage of their interaction with health professionals. The information given needs to be accessible to each individual and appropriate for their needs. Some people will welcome a lot of information and be comfortable in using technology to access that information. Others will want less information or may need sources which do not include using technology. It was felt that giving everyone a hastily printed ‘information sheet’ is not acceptable. The information given should enable people with tinnitus to make informed decisions and have input into their management plan. There should be opportunity for discussion after the individual has had chance to consider the information given.

Both lay representatives and clinicians on the committee felt that some health professionals did not know where to find the most appropriate information for people with tinnitus. The committee noted that further useful information and support can be found via local and national support groups and charities and it would be helpful if healthcare professionals could point people towards any useful resources.

The committee noted that whilst sharing information about what can affect tinnitus, mention may be made about preventative measures (safe listening practices) e.g. the use of ear plugs in noisy environments, as excessive noise can be associated with exacerbation or initial onset of tinnitus. When sharing information on the impact of tinnitus, the committee agreed that sleep can be discussed. The committee noted that it is fairly well-established sleep deprivation has an effect on how one copes with tinnitus, as well as being a co-morbidity. In addition, the committee acknowledged that stress can have an impact on tinnitus and make it worse. The committee agreed that information should be provided about stress also.

The committee discussed that British Sign Language (BSL) users need access to specialist care and support that recognised the unique language and culture of the Deaf community. A qualified BSL interpreter and/or access to information in BSL should be available in supporting a Deaf individual with tinnitus.

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Appendices

Appendix A: Review protocols

Table 5: Review protocol: What information should be provided to people with tinnitus, including self-management strategies?

ID	Field	Content
0.	PROSPERO registration number	Not registered
1.	Review title	Information that should be provided to people with tinnitus, including self-management strategies
2.	Review question	What information should be provided to people with tinnitus, including self-management strategies?
3.	Objective	To determine what information should be provided to people with tinnitus including: ○ Information about diagnosis and symptoms ○ Role of reassurance ○ Self-management strategies ○ Support groups and other sources of information; signposting to other websites
4.	Searches	The following databases will be searched: • Embase • MEDLINE • CINAHL • PsycINFO Searches will be restricted by: • English language

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		The searches may be re-run 6 weeks before final committee meeting and further studies retrieved for inclusion if relevant. The full search strategies will be published in the final review.
5.	Condition or domain being studied	Tinnitus
6.	Population	Inclusion: • Children, young people and adults with tinnitus • Parents and carers Strata: • Children/young people (up to 18 years) • Adults Exclusion: None
7.	Intervention/Exposure/Test	Views, opinions and experiences relating to information, education or support.
8.	Comparator/Reference standard/Confounding factors	Not applicable
9.	Types of study to be included	Qualitative interview and focus group studies (including studies using grounded theory, phenomenology or other appropriate qualitative approaches).
10.	Other exclusion criteria	Non-English language articles.
11.	Context	N/A
12.	Primary outcomes (critical outcomes)	Themes will be derived from the evidence identified for this review and not pre-specified.

		However for information to guide the technical team, relevant themes may include: Information about: o Causes o Symptoms o Diagnosis o Prognosis o Treatment options (including self-management) o Self-help and coping strategies o Where to go for further support (links, further reading, support groups etc.)
13.	Secondary outcomes (important outcomes)	Not applicable
14.	Data extraction (selection and coding)	EndNote will be used for reference management, sifting, citations and bibliographies. All references identified by the searches and from other sources will be screened for inclusion. 10% of the abstracts will be reviewed by two reviewers, with any disagreements resolved by discussion or, if necessary, a third independent reviewer. The full text of potentially eligible studies will be retrieved and will be assessed in line with the criteria outlined above. A standardised form will be used to extract information from studies (see Developing NICE guidelines: the manual section 6.4). Once saturation is considered to have been reached (all the themes are already covered in the data extraction) data from other included papers will not be extracted or critically appraised, but the paper will still be read to check for any additional themes and will be noted in the included studies. The point at which data extraction is reached will be noted within the review.

15.	Risk of bias (quality) assessment	Risk of bias will be assessed using the appropriate checklist as described in Developing NICE guidelines: the manual: For this review the CASP qualitative checklist will be used to assess risk of bias of individual studies. A sample of 10% of the critical appraisals will be quality assured by a second reviewer. Disagreements between the review authors over the risk of bias in particular studies will be resolved by discussion, with involvement of a third review author where necessary.
16.	Strategy for data synthesis	The synthesis of qualitative data will follow a thematic analysis approach. Information will be synthesised into main review findings. Results will be presented in a detailed narrative and in table format with summary statements of main review findings. GRADE CERQual will be used to synthesise the qualitative data and assess the certainty of evidence for each review finding.
17.	Analysis of sub-groups	If suggested by the evidence, themes may be reported separately for patients, families and carers.
18.	Type and method of review	☐ Intervention ☐ Diagnostic ☐ Prognostic ☒ Qualitative ☐ Epidemiologic ☐ Service Delivery ☐ Other (please specify)
19.	Language	English
20.	Country	England
21.	Anticipated or actual start date	29/05/18
22.	Anticipated completion date	11/03/20

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23.	Stage of review at time of this submission	**Review stage**	**Started**	**Completed**
		Preliminary searches	☐	☑
		Piloting of the study selection process	☐	☑
		Formal screening of search results against eligibility criteria	☐	☑
		Data extraction	☐	☑
		Risk of bias (quality) assessment	☐	☑
		Data analysis	☐	☑
24.	Named contact	**5a. Named contact** National Guideline Centre **5b Named contact e-mail** Tinnitus@nice.org.uk **5e Organisational affiliation of the review** National Institute for Health and Care Excellence (NICE) and the National Guideline Centre		
25.	Review team members	From the National Guideline Centre: • Dr Jennifer Hill [Guideline lead]		

		• Ms Sedina Lewis/Ms Julie Neilson [Senior systematic reviewer] • Dr Richard Clubbe [Systematic reviewer] • Mr David Wonderling [Health economist lead] • Mr Emtiyaz Chowdhury [Health economist] • Ms Jill Cobb [Information specialist] • Dr Giulia Zuodar [Project manager]
26.	Funding sources/sponsor	This systematic review is being completed by the National Guideline Centre which receives funding from NICE.
27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website: [NICE guideline webpage].
29.	Other registration details	N/A
30.	Reference/URL for published protocol	N/A

31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: Notifying registered stakeholders of publication Publicising the guideline through NICE's newsletter and alerts Issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.
32.	Keywords	Patients experience, information, tinnitus
33.	Details of existing review of same topic by same authors	N/A
34.	Current review status	☒ Ongoing ☐ Completed but not published ☐ Completed and published ☐ Completed, published and being updated ☐ Discontinued
35..	Additional information	N/A
36.	Details of final publication	www.nice.org.uk

Table 6: Health economic review protocol

Review question	**All questions – health economic evidence**
Objectives	To identify health economic studies relevant to any of the review questions.
Search criteria	• Populations, interventions and comparators must be as specified in the clinical review protocol above. • Studies must be of a relevant health economic study design (cost–utility analysis, cost-effectiveness analysis, cost–benefit analysis, cost–consequences analysis, comparative cost analysis). • Studies must not be a letter, editorial or commentary, or a review of health economic evaluations. (Recent reviews will be ordered although not reviewed. The bibliographies will be checked for relevant studies, which will then be ordered.)

	• Unpublished reports will not be considered unless submitted as part of a call for evidence. • Studies must be in English.
Search strategy	A health economic study search will be undertaken using population-specific terms and a health economic study filter – see appendix B below.
Review strategy	Studies not meeting any of the search criteria above will be excluded. Studies published before 2003, abstract-only studies and studies from non-OECD countries or the USA will also be excluded. Each remaining study will be assessed for applicability and methodological limitations using the NICE economic evaluation checklist which can be found in appendix H of Developing NICE guidelines: the manual (2014).[7] **Inclusion and exclusion criteria** • If a study is rated as both 'Directly applicable' and with 'Minor limitations' then it will be included in the guideline. A health economic evidence table will be completed and it will be included in the health economic evidence profile. • If a study is rated as either 'Not applicable' or with 'Very serious limitations' then it will usually be excluded from the guideline. If it is excluded then a health economic evidence table will not be completed and it will not be included in the health economic evidence profile. • If a study is rated as 'Partially applicable', with 'Potentially serious limitations' or both then there is discretion over whether it should be included. **Where there is discretion** The health economist will make a decision based on the relative applicability and quality of the available evidence for that question, in discussion with the guideline committee if required. The ultimate aim is to include health economic studies that are helpful for decision-making in the context of the guideline and the current NHS setting. If several studies are considered of sufficiently high applicability and methodological quality that they could all be included, then the health economist, in discussion with the committee if required, may decide to include only the most applicable studies and to selectively exclude the remaining studies. All studies excluded on the basis of applicability or methodological limitations will be listed with explanation in the excluded health economic studies appendix below. The health economist will be guided by the following hierarchies. *Setting:* • UK NHS (most applicable). • OECD countries with predominantly public health insurance systems (for example, France, Germany, Sweden). • OECD countries with predominantly private health insurance systems (for example, Switzerland). • Studies set in non-OECD countries or in the USA will be excluded before being assessed for applicability and methodological limitations. *Health economic study type:* • Cost–utility analysis (most applicable). • Other type of full economic evaluation (cost–benefit analysis, cost-effectiveness analysis, cost–consequences analysis). • Comparative cost analysis. • Non-comparative cost analyses including cost-of-illness studies will be excluded before being assessed for applicability and methodological limitations. *Year of analysis:* • The more recent the study, the more applicable it will be.

	• Studies published in 2003 or later but that depend on unit costs and resource data entirely or predominantly from before 2003 will be rated as ‘Not applicable’. • Studies published before 2003 will be excluded before being assessed for applicability and methodological limitations. *Quality and relevance of effectiveness data used in the health economic analysis:* • The more closely the clinical effectiveness data used in the health economic analysis match with the outcomes of the studies included in the clinical review the more useful the analysis will be for decision-making in the guideline.

Appendix B: Literature search strategies

The literature searches for this review are detailed below and complied with the methodology outlined in Developing NICE guidelines: the manual.[7]

For more detailed information, please see the Methodology Review.

B.1 Clinical search literature search strategy

Searches for patient views were run in Medline (OVID), Embase (OVID), CINAHL, Current Nursing and Allied Health Literature (EBSCO) and PsycINFO (ProQuest). Search filters were applied to the search where appropriate.

Table 7: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline (OVID)	1946 – 02 April 2019	Exclusions
Embase (OVID)	1974 – 02 April 2019	Exclusions
CINAHL, Current Nursing and Allied Health Literature (EBSCO)	Inception – 02 April 2019	Exclusions
PsycINFO (ProQuest)	Inception – 02 April 2019	Exclusions

Medline (Ovid) search terms

1.	Tinnitus/
2.	tinnit*.ti,ab.
3.	1 or 2
4.	letter/
5.	editorial/
6.	news/
7.	exp historical article/
8.	Anecdotes as Topic/
9.	comment/
10.	case report/
11.	(letter or comment*).ti.
12.	or/4-11
13.	randomized controlled trial/ or random*.ti,ab.
14.	12 not 13
15.	animals/ not humans/
16.	exp Animals, Laboratory/
17.	exp Animal Experimentation/
18.	exp Models, Animal/
19.	exp Rodentia/
20.	(rat or rats or mouse or mice).ti.
21.	or/14-20
22.	3 not 21
23.	limit 22 to English language

Embase (Ovid) search terms

1.	tinnitus/

2.	tinnit*.ti,ab.
3.	1 or 2
4.	letter.pt. or letter/
5.	note.pt.
6.	editorial.pt.
7.	Case report/ or Case study/
8.	(letter or comment*).ti.
9.	or/4-8
10.	randomized controlled trial/ or random*.ti,ab.
11.	9 not 10
12.	animal/ not human/
13.	Nonhuman/
14.	exp Animal Experiment/
15.	exp Experimental animal/
16.	Animal model/
17.	exp Rodent/
18.	(rat or rats or mouse or mice).ti.
19.	or/11-18
20.	3 not 19
21.	limit 20 to English language

CINAHL (EBSCO) search terms

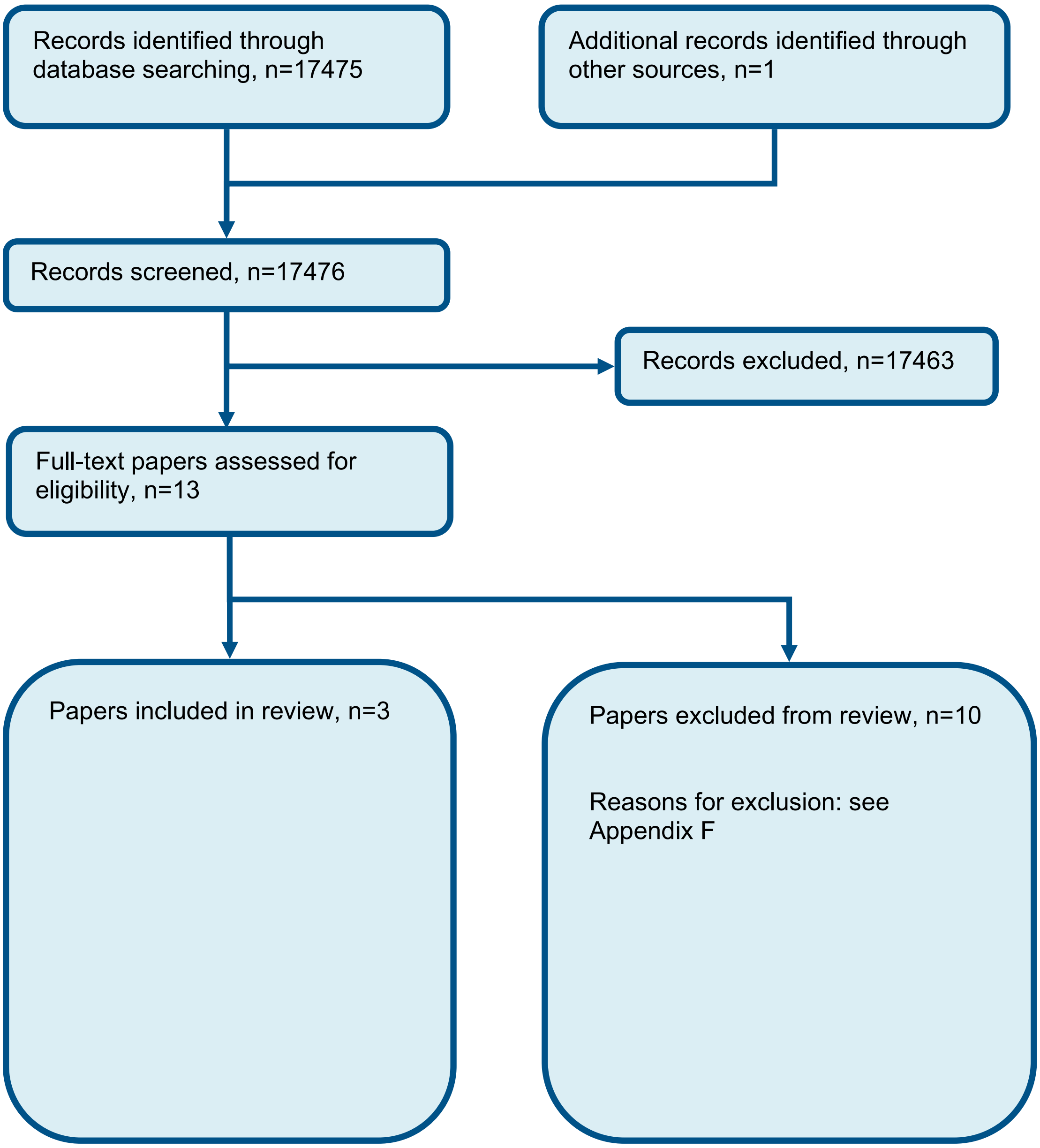
S1.	(MH "Tinnitus")
S2.	(MH "Tinnitus Retraining Therapy")
S3.	tinnit*
S4.	S1 OR S2 OR S3
S5.	PT anecdote or PT audiovisual or PT bibliography or PT biography or PT book or PT book review or PT brief item or PT cartoon or PT commentary or PT computer program or PT editorial or PT games or PT glossary or PT historical material or PT interview or PT letter or PT listservs or PT masters thesis or PT obituary or PT pamphlet or PT pamphlet chapter or PT pictorial or PT poetry or PT proceedings or PT “questions and answers” or PT response or PT software or PT teaching materials or PT website
S6.	S4 NOT S5

PsycINFO (ProQuest) search terms

1.	((MAINSUBJECT.EXACT.EXPLODE("Tinnitus") OR tinnit*) NOT (su.exact.explode("rodents") OR su.exact.explode("mice") OR (su.exact("animals") NOT (su.exact("human males") OR su.exact("human females"))) OR ti(rat OR rats OR mouse OR mice))) AND la.exact("ENG")Limits applied

Appendix C: Qualitative evidence selection

Figure 1: Flow chart of qualitative study selection for the review of what information should be provided to people with tinnitus, including self-management strategies



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Appendix D: Qualitative evidence tables

Study	Ming 2018[6]
Aim	Evaluate a tinnitus brochure to establish its readability and suitability for providing information to adults who experience tinnitus
Population	Adults experiencing tinnitus who could read and converse in English n=7; Male: 43%, Female: 57%; Mean age: 67.7 years
Setting	Christchurch, New Zealand (Further details not reported)
Study design	Qualitative interview study (mixed methods study; quantitative element: questionnaire completed by 2 audiologists about suitability)
Methods and analysis	Group semi-structured interviews - purposive and convenience sampling was used. Four participants met in one interview group, and three participants met in a second interview group. Participants were mailed a packet containing: (1) an information sheet, (2) a consent form, (3) a demographic sheet, (4) the Tinnitus Reaction Questionnaire, and (5) the original tinnitus brochure. Participants were asked to complete the questionnaires and read the brochure before attending the group interview session. Hearing tests were conducted before the interview session who those who were unable to provide a recent hearing test. Participants were offered a $10 voucher for their time and participation in the study. Thematic content analysis - the first author organised the data into content units, which identified points of interest. The first author used an inductive approach to compare content units to each other to identify similarities and recurring themes. The first author refined the content units within each theme to generate sub-themes. Both authors discussed the thematic analysis, along with the resulting changes made to the brochure
Findings	a) **Information about what causes changes in tinnitus needed**: Participants wanted information about how to prevent tinnitus in the information brochure
Limitations and applicability of evidence	The methods used by the researches to analysis the data was clearly described and deemed appropriate. However, there is limited information for aspects of data collection: (1) What was the nature of the relationship between the interviewer (first author) and interviewees (people with tinnitus)? - No information is provided about the nature of the relationship. The relationship between the interviewer and interviewee can influence the questions asked and responses given by interviewees This study was not directly applicable for this review question as the aim of the study was to investigate the format of the information that should be provided to people with tinnitus. The aim of this evidence review was to identify what information should be provided to

Study	Ming 2018[6]
	people with tinnitus. Consequently, the relevant finding extracted from the study was not adequately supported with rich data, presenting concerns with adequacy. However, this study also presented some useful findings and insight into aspects of the information provision.

Study	Pyrce 2018[9]
Aim	Overall: To develop a decision aid for tinnitus care that would meet international consensus for decision aid quality Qualitative aspect of mixed methods study: Elicit patient preferences for tinnitus care and the key information that patients required to make decisions about clinical care.
Population	Individuals who had sought help for tinnitus n=41; Male: 59%, Female: 41%; Age: Over 50 years (80%) ; Hearing loss: 58.5%; Clinicians participants received care from: Otolaryngologists: 46%, Audio-Vestibular Physicians: 24%, Audiologists: 36%, Hearing Therapists: 54%, General Practitioners: 100%
Setting	United Kingdom (Further details not reported)
Study design	Qualitative interview study
Methods and analysis	Interviews (in-depth) – conducted in the participants' homes or clinic locations. Interviews were audio recorded and transcribed Grounded theory analysis - constant comparison of accounts to develop themes that are modelled into an overarching theory about how a phenomenon (in this case how preference for coping with tinnitus) occur and are mediated.
Findings	a) **Information should be provided about management options for tinnitus**. Participants wanted information about the impact of management options for tinnitus and how to access management options. Study explored the use of "talking therapies, using sound and group support" as management options.
Limitations and applicability of evidence	1. The methods used by the researches to analysis the data was clearly described and deemed appropriate. However, there is limited information for aspects of sampling methods, data collection and reporting of findings: What sampling method was used? There is no information about how participants were selected or recruited. Study authors reported that they "sought and included participants in their 20's and 30's" to ensure contrast to the majority of the sample (80% were aged over 50 years) 2. What was the nature of the relationship between the interviewers and interviewees? - No information is provided about the nature of the relationship. The relationship between the interviewer and interviewee can influence the questions asked and responses given by interviewees

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Study	Pyrce 2018[9]
	3. What quotes informed study themes? – there is limited data quoted within the study, difficult to infer if themes generated were accurate and fully applicable for this evidence review. This study was directly applicable for this review question as part of the aim of the study was to investigate information that people with tinnitus deemed as important for decision-making. The aim of this evidence review was to identify what information should be provided to people with tinnitus. This study provided useful findings to inform themes generated for this evidence review, particularly around the role of management strategies for people with tinnitus.

Study	Thompson 2011[13]
Aim	To investigate in detail the experience of participating in a tinnitus therapy group and of adjusting to tinnitus
Population	People with tinnitus who attended tinnitus groups led by audiologists and clinical psychologists or individual tinnitus therapy. Participants attended five 2-hour sessions held on a weekly basis. Topics covered included anatomy and physiology of the ear, mechanisms of tinnitus, sound enrichment, relaxation, cognitive behavioural therapy, mindfulness, sleep hygiene and biofeedback. Participants who did not attend the group received individual tinnitus therapy with the same content but without the additional group support. n=8; Male: 50%, Female: 50%; Mean age: 59.5 years; Location of tinnitus: Bilateral: 63%, Unilateral: 37%; Duration of tinnitus (years): range – 1-20 years
Setting	South Wales, UK (Further details not reported)
Study design	Qualitative interview study
Methods and analysis	Interviews (specific interview style not reported) with purposefully selected sample. The participants were contacted by an audiologist to arrange a mutually convenient time to hold an interview regarding their tinnitus experience. Particular areas of interest were perceptions of tinnitus and the development of self-management strategies which illustrated coping behaviours. The interviews were led by a topic schedule and were audio-recorded and transcribed. Grounded theory analysis - the interviews were transcribed and then coded using a grounded theory approach. The data in this study took the form of individual interviews which were transcribed and then coded openly. Starting with the first interview, a number of categories were created as particular themes or important points were recognised. Data analysis took place at the same time as the data gathering in order to purposefully select participants and gather the richest and most relevant data possible. Data gathering continued until a point of 'saturation ', i.e. until no new dimensions to categories appear.

Study	Thompson 2011[13]
Findings	a) **Information should be provided to improve understanding of tinnitus**. Participants sought information to develop the identity of their tinnitus and searched for answers
	b) **Information about what causes changes in tinnitus needed**. Participant wanted to know what factors influenced their tinnitus (e.g. what could improve their tinnitus), including eating habits and working habits. **Relevant quote**: "How does it fluctuate, the noise in my ear?...we look eating habits, drinking habits, working habits, but it's the same all the time…"
	c) **Information should be provided about management options for tinnitus.** Participants wanted information about the impact of management options for tinnitus and how to access management options. **Relevant quotes:** "…I made an appointment to go and see (a private ENT consultant), I was just thinking, there must be something they can do…"; "…there is a box they can fit you with…to make it go away"
	d) **Information should be tailored to the person's needs (e.g. visual with verbal explanations)**. Participant received a diagram of the ear with a verbal explanation, helped understanding of tinnitus and provided reassurance. **Relevant quote**: "She gave me a good diagram of the ear and explained exactly what happened to me…because she helped me understand it, it probably reduced the annoyance".
Limitations and applicability of evidence	The methods used by the researches to analysis the data was clearly described and deemed appropriate. However, there is limited information for aspects of data collection: (1) Which interview style was used? – It is not reported if the interview was semi-structured or structured (2) What was the nature of the relationship between the interviewer (audiologist) and interviewees (people with tinnitus)? - No information is provided about the nature of the relationship. The relationship between the interviewer and interviewee can influence the questions asked and responses given by interviewees (3) What was the content of the topic schedule? – Limited information about the type of questions included in the topic schedule that was used by the interviewers and whether the topic schedule changed as themes emerged This study was not directly applicable for this review question as the aim of the study was to investigate experiences of tinnitus related to tinnitus therapy interventions. The aim of this evidence review was to identify what information should be provided to people with tinnitus. Consequently, some findings extracted from the study were not adequately supported with rich data, presenting concerns with adequacy. However, this study presented some useful findings and insight into aspects of the information provision.

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Appendix E: Health economic evidence selection

A health economics review was not conducted as this is a qualitative review.

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Appendix F: Excluded studies

F.1 Excluded qualitative studies

Table 8: Studies excluded from the qualitative review

Reference	Reason for exclusion
Andersson 2008[1]	No relevant findings could be extracted - study does not address what information should be provided to children, young people or adults with tinnitus
Fackrell 2012[2]	Incorrect study design – quantitative study design (narrative results/findings not provided)
Greenwell 2016[3]	Incorrect study design – systematic review
Loumidis 1991[4]	Incorrect study design – quantitative study design (RCT)
Manchaiah 2019[5]	Incorrect study design – literature search
Nyenhuis 2013[8]	Incorrect study design – quantitative study design (RCT)
Pryce 2018[10]	No relevant findings could be extracted – study does not address what information should be provided to children, young people or adults with tinnitus
Reich 2001[11]	Incorrect study design - narrative publication
Thompson 2018[12]	Incorrect study design – quantitative study design (Delphi survey)
Tyler 1983[14]	Incorrect study design – quantitative study design (population survey)

F.2 Excluded health economic studies

None.

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