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Prevalence and characteristics of spontaneous tinnitus in 11 year old children

Rachel Humphriss[1,2], Amanda J. Hall[1,3], David M. Baguley[4,5]

[1] Children's Hearing Centre, University Hospitals Bristol NHS Foundation Trust, St Michael's Hospital, Southwell Street, Bristol BS2 8EG.

[2] School of Social and Community Medicine, University of Bristol, Bristol, UK

[3] Centre for Child and Adolescent Health, School of Social and Community Medicine, University of Bristol, BS8 2BN

[4] Audiology Department, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

[5] Department of Vision and Hearing Sciences, Anglia Ruskin University, Cambridge, UK

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Abbreviations:

ALSPAC = Avon Longitudinal Study of Parents and Children

OR = odds ratio

PTA = Pure Tone Audiometry

Address for correspondence:

Dr Rachel Humphriss, Children's Hearing Centre, University Hospitals Bristol NHS Foundation Trust, St Michael's Hospital, Southwell Street, Bristol BS2 8EG.

Tel: 0117 342 1611 E-mail: rachel.humphriss@uhbristol.nhs.uk

Abstract

Objective: To estimate the prevalence of spontaneous tinnitus in 11-year old children

Design: A prospective UK population-based study

Study sample: 7092 children from the Avon Longitudinal Study of Parents and Children (ALSPAC) who attended the hearing session at age 11 years and answered questions about tinnitus

Results: We estimated the prevalence of *any* spontaneous tinnitus as 28.1% (95% CI 27.1, 29.2%), and the prevalence of "clinically significant" tinnitus as 3.1% (95% CI 2.7, 3.5%). Children were less likely to have clinically significant tinnitus if the tinnitus was "soft" rather than "loud" and if continuous rather than intermittent. Clinical significance was more likely if the tinnitus occurred more than once a week. Neither pitch nor length of history were important determinants of clinical significance. Small increases in mean hearing threshold (of up to 2.3 dB HL) were associated with clinically significant tinnitus.

Conclusions: Although the prevalence of any tinnitus in 11 year old children appears high, the small proportion in which this was found to be clinically significant implies that this does not necessarily indicate a large unmet clinical demand. We would expect approximately one child per class of 30 to have clinically significant tinnitus which is, by definition, problematic.

Introduction

Tinnitus is a relatively common condition, prevalence estimates in adults of all ages varying from 4.4 to 25.3% (Hoffman & Reed, 2004; Shargorodsky et al, 2010), though the majority of studies consider developed world populations only (detailed review in Baguley et al., 2013a). Several studies have sought to estimate the prevalence of tinnitus in children. However, the methodology of such studies is not straightforward. Children will rarely spontaneously report tinnitus even though they might admit to it when questioned (Savastano, 2007; Baguley et al, 2013b). Associated with this is the possibility of over-reporting as the child seeks to please the questioner (Stouffer 1991). Children also find tinnitus very difficult to describe, its presence often manifesting as behavioural changes such as educational difficulties, problems with concentration and poor sleep (Kentish et al, 2000; Aksoy et al, 2007; Coelho et al, 2007). Finally, there is the issue of distinguishing between tinnitus sensation and tinnitus suffering given that many adults report some internal noise (Eggermont & Zeng, 2012).

These concerns notwithstanding, published estimates of the prevalence of tinnitus in children vary between 6.0% and 46.9% in normally hearing or population-based samples (see Table S1, Supplementary Information available online at weblink), with a higher prevalence in children with a documented hearing loss (Juul et al, 2012). The variation between estimates is likely to be accounted for by the methodological differences of the studies in terms of reference population (particularly with regard to age), reference time period and tinnitus questions used. Only two of these previous studies have differentiated between spontaneous and noise-induced tinnitus. Holgers

(2003) estimated the prevalence of spontaneous tinnitus as 12% based on a population-based sample of 964 7-year-old children from Sweden. In contrast, Juul et al (2012) estimated the prevalence of spontaneous tinnitus in 706 normally hearing 7-year-old children (also from Sweden) to be 27.0%. However, neither of these studies were clear as to their reference time period or included any measure of tinnitus severity or clinical significance. Regarding other studies on UK populations, the only previous UK-based study purporting to estimate prevalence was based on a small sample (n=93), rather than a population-based design (Mills et al, 1986) and cannot therefore be considered generalizable.

A recent multi-centre study (Baguley et al., 2013b) reporting the incidence (that is, the number presenting at specialist clinics) of childhood tinnitus found the numbers to be low, and at odds with the reported high prevalence data. The conclusions were that either significant numbers of young persons with troublesome tinnitus were not being referred, or that the prevalence data is not indicative of the clinical problem. Although many previous studies seem to report that a significant proportion of children find their tinnitus disturbing or bothersome (Aksoy et al, 2007; Savastano, 2007), Park et al (2014) found that only 0.6% of the children who reported tinnitus in their population-based sample of 12-19 year olds complained of severe discomfort.

Children have reported buzzing, ringing, whistles and “insects / animals” as common descriptors of tinnitus (Mills et al, 1986; Aksoy et al, 2007; Coelho et al, 2007; Savastano, 2007). Most previous studies have also reported tinnitus loudness as quiet/soft (Aksoy et al, 2007; Savastano, 2007). The most common tinnitus pitch reported is “high” (Aksoy et al, 2007; Bartnik et al, 2012) although this is not

universally the case (Savastano, 2007). A right ear dominance has been reported (Coelho et al, 2007), although more commonly there has been no evidence of laterality (Aksoy et al, 2007; Savastano, 2007; Baguley et al, 2013b). Reports of a gender bias appear inconsistent (Coelho et al, 2007; Bartnik et al, 2012; Juul et al, 2012; Baguley et al, 2013b). Most previous studies have found that children experience their tinnitus continuously (Martin & Snashall, 1994; Savastano, 2007), although Aksoy et al (2007) found that the majority of their sample reported intermittent tinnitus.

The present study seeks to estimate the prevalence of spontaneous tinnitus in 11-year-old children using data from the Avon Longitudinal Study of Parents and Children (ALSPAC). ALSPAC is an ongoing UK population-based birth cohort study based in the former Avon region of the UK, a rural, suburban and urban area centred around the city of Bristol. (Further details can be found at http://www.bristol.ac.uk/alspac.) A secondary aim is to describe the characteristics of this tinnitus and thereby estimate the prevalence of clinically significant tinnitus in this age group. This is an important area to investigate given the lack of consistent evidence in this area (see Table S1 WEBLINK) and that there is evidence for adverse psychosocial associations of tinnitus in children (Edwards & Crocker, 2008). This study has the potential to inform decisions about the commissioning of tinnitus services for children.

Methods

Avon Longitudinal Study of Parents and Children (ALSPAC)

A total of 14,541 pregnant women in the Avon area of the UK with expected delivery dates of 1 April 1991 to 31 December 1992 were recruited into the study. The data collected on the mothers and the offspring is detailed in Golding et al (2001). For further details about the cohort and the attrition rate see Boyd et al (2013). The study website contains details of all the data that is available through a fully searchable data dictionary (www.bris.ac.uk/alspac/researchers/data-access/data-dictionary/).

At age 11, children attended a half day hands-on research clinic at the University of Bristol. Children attended a number of different sessions including physical measurements, psychological assessments, vision and hearing tests. A total of 7097 children attended the hearing test session, which formed our study sample.
Ethical approval for the study was obtained from the ALSPAC Law and Ethics Committee and the Local Research Ethics Committees.

Tinnitus, hyperacusis and auditory measures

Children attended a hearing session accompanied by their parents. To assess whether they experienced tinnitus, the children were asked the following question:
"Do you ever get noises in your ears? (not associated with noise exposure)".
Children that answered "yes" to this question were asked the questions listed in Table 1:

Insert Table 1 here

The tinnitus interview and hearing test session were carried out by audiologists and graduate physiologists specifically trained for this purpose. The tinnitus interview was tailored to the level and understanding of the child, and was conducted orally only.

As a measure of hyperacusis, children, accompanied by their parents, answered questions about oversensitivity or distress to particular sounds. Specifically the child was asked whether they "ever experience over-sensitivity or distress to particular sounds?" These results are reported in detail by Hall et al (2015).

Air conduction hearing thresholds were measured at 500 – 8000 Hz and bone conduction thresholds at 500 – 2000 Hz using a GSI 61 audiometer in a sound treated booth.

Statistical analyses were carried out using STATA IC10 software. "Clinically significant" tinnitus was defined by combining two criteria: (a) duration of noises > seconds and, (b) children who were either slightly or severely bothered by their noises, a working definition that was based on the clinical experience of the authors. Associations between the presence of clinically significant tinnitus (yes/no) and the measured tinnitus characteristics (in table 1) were assessed using logistic regression. Likewise, associations between audiometry thresholds and the presence of clinically significant tinnitus were assessed using logistic regression with "any" tinnitus as the reference category (we were interested in the threshold between non-clinically significant and clinically significant tinnitus). The Kruskall-Wallis test was used to explore the differences in hearing thresholds between children with no tinnitus, non-significant tinnitus and clinically significant tinnitus (as the assumption of equal variances required for a one-way analysis of variance was found to be invalid). Possible interactions between tinnitus loudness and other pitch, laterality and noise frequency (identified *a priori* as plausible) were explored using Likelihood Ratio

Tests with presence /absence of clinically significant tinnitus as the outcome variable. A systematic search for all possible interactions was not performed to avoid the identification of chance effects: it is recognised that formal tests for interaction lack power (Kirkwood & Sterne, 2003).

Results

Prevalence estimates

Of the 7097 children attending the hearing session, 7092 answered the question "Do you ever get noises in your ears? (not associated with noise exposure)". A total of 1996 of these children gave a positive response to this question, giving a prevalence estimate for *any* spontaneous tinnitus in this age group as 28.1% (95% CI 27.1, 29.2%).

The characteristics of the reported tinnitus are summarised in Table 1. As described previously, we used two of these characteristics to calculate the prevalence of "clinically significant" tinnitus, as previously defined (i.e. duration of noises > seconds and, that the children were either slightly or severely bothered by their noises).

A total of 1128 of the 7092 children reported that their tinnitus lasted minutes or hours, giving a prevalence estimate of 15.9% (95% CI 15.1, 16.8%) for tinnitus lasting at least minutes in duration. A total of 313 of the 7092 children reported that they were either "slightly" or "severely" bothered by their tinnitus, giving a prevalence estimate for bothersome tinnitus of 4.4% (95% CI 3.9, 4.9%). Of the

children reporting tinnitus lasting minutes or hours, 218 of these were either slightly or severely bothered by their tinnitus. Combining these two criteria therefore gives a prevalence estimate for "clinically significant" tinnitus of 3.1% (95% CI 2.7, 3.5%).

Tinnitus characteristics

From Table 2, most children described their tinnitus as something other than buzzing or whistling, and about two thirds reported it as being high-pitched. Over half described their tinnitus as being in both ears; when unilateral, right-sided tinnitus was slightly more common than left-sided. Just over half of the children described their tinnitus as "soft" with just under a third reporting it as "loud", the remainder falling into the "don't know" category. Approximately equal proportions of children reported intermittent and continuous tinnitus. Just over half of the children reported that their tinnitus was "minutes/hours" in duration as opposed to "seconds". Most children (43.7%) reported experiencing their tinnitus once every few months, although significant proportions experienced it at least once a week (29.3%) or were unable to report on frequency (17.5%). Most children did not know how long they had experienced their noises. Finally, the majority (84.1%) of children reported that they were not bothered by their noises, with very few (n=38, 1.9%) describing their tinnitus as severely bothersome.

The associations between these measured characteristics and the presence of clinically significant tinnitus (as defined above) are given in Table 3. In summary, children were less likely to have clinically significant tinnitus (which is by definition bothersome) if they were unable to lateralise it, if the tinnitus was "soft" rather than "loud" and if it was continuous rather than intermittent. Tinnitus was more likely to be clinically

significant if it occurred more than once a week. Neither pitch nor length of history were found to be important determinants of clinical significance. No strong evidence was found to suggest the presence of interactions between loudness and either pitch, laterality or frequency of noises (Table S2, Supplementary Information available online at weblink).

Associations with hyperacusis

A total of 21 of the 218 children with clinically significant tinnitus also had hyperacusis. Children were twice as likely to have clinically significant tinnitus (than non-significant tinnitus) if they had hyperacusis (OR 2.10, 95% CI 1.27, 3.47, p=0.0064).

Association with gender

The sample of 7092 children consisted of 3481 boys and 3611 girls. Gender was not associated with the presence of "any" tinnitus (Chi^2=0.0002, p=0.988) nor with the presence of clinically significant tinnitus (Chi^2=2.22, p=0.136).

Association with PTA results

Mean differences in hearing threshold in the categories "no tinnitus", "non-significant tinnitus" and "clinically significant tinnitus" are given in Table 4, which shows how hearing thresholds tend to become poorer as tinnitus category becomes more severe. For example, for the right ear, mean hearing thresholds were 6.4dB HL in participants with clinically significant tinnitus, 4.6dB HL in those with non-significant tinnitus and 3.7 dB HL in those with no tinnitus. Similar results were recorded for the left ear.

The majority of the recorded differences in hearing threshold appear significant in that they have an associated low p-value.

The associations between clinically significant tinnitus and mean hearing thresholds were shown to be present but weak using logistic regression (Table 5), again supporting the notion that increasing mean hearing threshold is a risk factor for clinically significant tinnitus. This effect appears slightly stronger for low and mid-frequency air conduction hearing thresholds (500Hz – 2000Hz) and was not evident for the bone conduction thresholds that were measured (Table 5).

Discussion

Main findings

Using a large population-based study, we have estimated the prevalence of *any* spontaneous tinnitus in 11 year old children as 28.1% (95% CI 27.1, 29.2%) and the prevalence of *clinically significant* spontaneous tinnitus as 3.1% (95% CI 2.7, 3.5%). The vast majority (84%) of children who experience tinnitus in this study are not bothered by it, and would not need referral for tinnitus specific interventions. This supports the view that the high prevalence of tinnitus in childhood is not necessarily indicative of a large unmet clinical demand. Indeed, Savastano (2007) found that although 33.7% of children reported tinnitus when questioned, only 6.5% reported tinnitus spontaneously. Similarly, Park et al (2014) found that although 17.7% of their population-based sample of 12-19 year olds reported tinnitus, only 0.6% found this "very annoying".

ALSPAC is the largest study to estimate the prevalence of spontaneous tinnitus in this age group, and the largest UK-based study to estimate prevalence of tinnitus in children of any age. Our estimates fall within the broad-range of values given by other studies (Table S1). Our prevalence estimate for any tinnitus is, however, more than double that of Holgers (2003), the only other population-based study to specifically look at spontaneous tinnitus. It is likely that this difference can be accounted for by the variations in methodology between the two studies including sample size, country and age of the children. We also acknowledge that at age 11, many children will use personal music players that can produce sounds at high levels, and that there is therefore the potential for confusion between spontaneous and noise-induced tinnitus. However, the extent to which children of this age could reliably differentiate between tinnitus associated with noise exposure, and that which arose spontaneous could be questionable. The potential implications for programmes promoting reduced exposure to harmfully loud sound are significant, and this is an area where further research is indicated.

We found the loudness of the tinnitus to be an important predictor of clinical significance, tinnitus being less likely to be clinically significant if "soft". Other studies have found similarly with adults (Hoekstra et al, 2014). Approximately equal numbers of children reported their tinnitus as intermittent vs. continuous. This contrasts with other studies which found continuous tinnitus to be more common (Savastano, 2007). We also found intermittent tinnitus to be associated with clinical significance indicating that it may be the stop/start characteristics of intermittent tinnitus that may be associated with it being bothersome, rather than the relentless

nature of a continuous tinnitus. Little consideration has been given to this factor in the literature on either children or adults with tinnitus. Similarly, little consideration has been given to how the perceived pitch of tinnitus influences clinical significance: in the present study, pitch was not found to be an important factor in predicting clinical significance.

The comorbidity between tinnitus and hyperacusis that we found is well known (Coelho et al, 2007; Eggermont & Zeng, 2012; Hall et al, 2015), and several common mechanisms have been suggested, including increased central disinhibition in central auditory pathways (Eggermont & Zeng, 2012). Similarly, the lack of gender bias in childhood tinnitus has also been noted in most (Holgers, 2003; Holgers & Juul, 2006; Aksoy et al, 2007) but not all previous studies (Coelho et al, 2007; Kim et al, 2012).

Finally, the associations that we found between increasing hearing threshold and the presence of clinically significant tinnitus have also been found previously (Holgers & Juul, 2006; Coelho et al, 2007) although not universally in population-based studies (Holgers, 2003; Park et al, 2014). Differences in the order of 1 – 2 dB were found in the present study which although found to be "statistically significant" cannot be considered clinically significant. It is also worth noting here that low p-values are more likely with large sample sizes such as these.

It is interesting that these associations were evident for air conduction but not for bone conduction thresholds and also that they tended to be slightly stronger for lower frequency sounds. One might therefore tentatively suggest middle ear involvement which could be a theme for future research.

Study strengths and weaknesses

The strengths of ALSPAC are many, the most pertinent to the present study being the population-based nature of the sample and its broad generalizability to the UK population as a whole (Boyd et al, 2013; Fraser et al, 2013). Other previous studies of this nature have purported to offer prevalence estimates, but have not undertaken analyses to explore the representativeness of their sample (e.g. Holgers, 2003; Aksoy et al, 2007; Coelho et al, 2007). This study is also unique in calculating clinically significant tinnitus and thereby disregarding those children perhaps prone to suggestibility.

We acknowledge that our study sample has been found to be socially advantaged when compared to the remainder of the cohort that did not attend the audiology session at age 11 years (see Hall et al, 2015). It is therefore possible that this selection bias may have affected our prevalence estimates. However, the social patterning of tinnitus is not straightforward. There is evidence that in adults both *higher* education status and being unemployed appear associated with more severe tinnitus (Hoekstra et al, 2014) but also conflicting evidence that tinnitus is more common in lower education and income groups (Hoffman & Reed, 2004). In adolescents, there is no evidence that tinnitus is related to socioeconomic status (Olsen Widen & Erlandsson, 2004). The potential effect of the ALSPAC selection bias on our prevalence estimates therefore remains unclear. We also acknowledge that in common with the extant literature, our identification of children with tinnitus was based on a single question which raises the possibility of misclassification in the identification of children with tinnitus.

Clinical relevance

According to the present study in 11 year old children, we would expect approximately one child per class of 30 to have clinically significant tinnitus which, by definition, is both bothersome and is more than "seconds" in duration. It is important that the epidemiology of tinnitus is well understood so that appropriate rehabilitative strategies can be offered, and appropriate commissioning of services undertaken. The evidence base for therapy for troublesome tinnitus therapy is very sparse indeed: treatment options include sound therapy (ear level and bedside), counselling, and relaxation (Baguley et al, 2013b) and a specific type of psychological therapy has been proposed, titled 'Narrative therapy' (Edwards & Crocker, 2008).

One question that does arise is how far a clinician should probe a child for troublesome tinnitus. During the recent formulation of guidance for the management of tinnitus in childhood by the British Society of Audiology, discussion was held around the issue of whether every child in an ENT or Audiology Clinic should be asked directly and specifically about tinnitus (Kentish, personal communication). Data from the present study would indicate that this is likely to lead to over-reporting of tinnitus, and that children will self-report severe tinnitus.

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Declaration of interest

The authors report no declarations of interest.

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Table 1

ALSPAC tinnitus questions

Question	***Answer choices***	***Recoding of answer choices***
Can you describe the noise?	*Buzzing , whistling , other*	-
Is it low or high pitch?	*Low , high , don't know*	-
Which ear is it in?	*Left , right , both , don't know*	-
Is the noise loud or soft?	*Loud , soft , don't know*	-
Do you hear the noises	*Intermittently , continuously , don't know*	-
How long do the noises last?	*Seconds , minutes , hours , don't know*	*Seconds, minutes/hours, don't know*
How often do you hear the noises?	*Each day, every few days, each week, each month, every few months, each year, don't know*	*Each day, at least once a week, at least once every few months, each year, don't know*
How long have you had the noises?	*Days, one week, one month, several months, one year, several years, don't know*	*Up to one week, one to several months, one year, several years, don't know*
Do the noises bother you?	*Not bothered, slightly bothered, severely bothered*	-

Table 2

Characteristics of tinnitus

Characteristic	**Total N**	**Descriptor**	**N**	**%**
Description of noise	1992	Buzzing	600	30.1
		Whistling	116	5.8
		Other	1276	64.1
Pitch	1954	Low	484	24.8
		High	1305	66.8
		Don’t know	165	8.4
Laterality	1983	Left	211	10.6
		Right	353	17.8
		Both	1160	58.5
		Don’t know	259	13.1
Loudness	1940	Loud	592	30.5
		Soft	1133	58.4
		Don’t know	215	11.1
Intermittency	1923	Intermittent	921	47.9
		Continuous	991	51.5
		Don’t know	11	0.6
Duration of noises	1968	Seconds	679	34.5
		Minutes / hours	1128	57.3
		Don’t know	161	8.2
Frequency of noises	1969	Each day	117	5.9
		At least once a week	577	29.3
		At least once every few months	861	43.7
		Each year	69	3.5
		Don’t know	345	17.5
Length of history	1986	Up to one week	14	0.7
		One to several months	251	12.6
		One year	212	10.7
		Several years	778	39.2
		Don’t know	731	36.8
How bothersome	1966	Not bothered	1653	84.1
		Slightly bothered	275	14.0
		Severely bothered	38	1.9

Table 3

Univariate associations between the presence of "clinically significant" tinnitus and other tinnitus characteristics

(Odds Ratio, OR, for clinically significant tinnitus by characteristic category)

Characteristic	N	OR [95% CI]	P value
Description			
Buzzing	580	1 (ref)	0.531
Whistling	114	0.95 [0.51, 1.79]	
Other	1238	0.91 [0.67, 1.23]	
Pitch			
Low	471	1 (ref)	0.353
High	1268	1.12 [0.80, 1.58]	
Don't know	162	1.28 [0.74, 2.21]	
Ear			
Left	206	1 (ref)	0.242
Right	341	0.66 [0.38, 1.13]	
Both	1127	0.90 [0.58, 1.39]	
Don't know	252	0.49 [0.26, 0.91]	
Loudness			
Loud	577	1 (ref)	<0.001
Soft	1100	0.31 [0.23, 0.43]	
Don't know	209	0.87 [0.57, 1.32]	
Intermittency			
Intermittent	914	1 (ref)	<0.001
Continuous	943	0.52 [0.39, 0.71]	
Don't know	11	0.60 [0.08, 4.71]	
Frequency of noises			
Each day	97	3.30 [0.92, 11.9]	0.459
At least once a week	565	4.04 [1.24, 13.1]	
At least once every few mths	840	2.46 [0.76, 8.01]	
Each year	67	1 (ref)	
Don't know	333	1.51 [0.44, 5.19]	
Length of history			
Up to one week	14	1 (ref)	0.054
One to several months	246	0.77 [0.16, 3.62]	
One year	212	0.91 [0.19, 4.30]	
Several years	761	0.94 [0.21, 4.26]	
Don't know	697	0.53 [0.12, 2.45]	

Table 4

Mean hearing threshold by tinnitus category

Ear	**Freq (Hz)**	**Clinically significant tinnitus**		**Non-significant tinnitus**		**No tinnitus**		**Difference in means (clinically signif. tinnitus *minus* non-signif. tinnitus) (dB)**	**Difference in means (any tinnitus *minus* no tinnitus) (dB)**	**P value***
		N	**Mean dB HL**	**N**	**Mean dB HL**	**N**	**Mean dB HL**			
Right	500	215	7.3	1706	5.6	5042	4.5	1.8	1.3	0.0001
	1000	218	6.8	1720	4.6	5090	3.6	2.2	1.2	0.0001
	2000	218	6.2	1720	4.3	5085	3.4	1.9	1.1	0.0001
	3000	215	6.1	1712	4.0	5043	3.2	2.1	1.0	0.0001
	4000	217	5.4	1717	4.1	5084	3.0	1.3	1.3	0.0001
	6000	213	9.0	1705	7.4	5034	5.9	1.5	1.8	0.0001
	8000	215	10.5	1710	9.2	5056	7.5	1.3	1.9	0.0001
	Mean	218	6.4	1720	4.6	5090	3.7	1.8	1.2	0.0001
Left	500	215	7.6	1710	5.8	5040	4.9	1.8	1.1	0.0100
	1000	218	6.3	1720	4.0	5088	3.0	2.3	1.3	0.0001
	2000	218	6.2	1719	4.2	5088	3.4	2.0	1.0	0.0001
	3000	216	5.8	1711	4.4	5043	3.3	1.4	1.3	0.0001
	4000	218	6.4	1717	4.9	5079	3.7	1.6	1.4	0.0011
	6000	214	10.0	1707	8.2	5036	7.0	1.8	1.5	0.0003
	8000	213	9.8	1712	8.7	5060	7.1	1.1	1.8	0.0001
	Mean	218	6.6	1720	4.7	5088	3.8	1.9	1.2	0.0001
Bone	500	213	-0.2	1714	0.1	5061	-0.2	0.3	0.3	0.3296
	1000	216	-0.5	1714	-0.8	5065	-1.3	-0.4	-1.2	0.2726
	2000	214	2.5	1713	2.3	5061	1.7	-0.2	0.6	0.2284

* p values from Kruskall-Wallis test

Table 5

Univariate associations between hearing thresholds and presence/absence of clinically significant tinnitus (OR for clinically significant tinnitus per dB increase in hearing threshold)

Ear	**Freq (Hz)**	**Clinically significant tinnitus**	**Non-significant tinnitus**	**OR [95% CI]**	**P**
Right	500	215	1706	1.02 [1.01, 1.04]	0.0042
	1000	218	1720	1.03 [1.01, 1.04]	0.0004
	2000	218	1720	1.03 [1.01, 1.04]	0.0017
	3000	215	1712	1.03 [1.01, 1.04]	0.0011
	4000	217	1717	1.02 [1.00, 1.03]	0.0509
	6000	213	1705	1.01 [1.00, 1.03]	0.0404
	8000	215	1710	1.01 [1.00, 1.02]	0.1005
	Mean	218	1720	1.02 [1.01, 1.05]	0.0012
Left	500	215	1710	1.02 [1.01, 1.03]	0.0088
	1000	218	1720	1.03 [1.01, 1.04]	0.0006
	2000	218	1719	1.02 [1.01, 1.04]	0.0018
	3000	216	1711	1.02 [1.00, 1.03]	0.0396
	4000	218	1717	1.01 [1.00, 1.03]	0.0360
	6000	214	1707	1.01 [1.00, 1.02]	0.0297
	8000	213	1712	1.01 [1.00, 1.02]	0.2149
	Mean	218	1720	1.03 [1.01, 1.04]	0.0017
Bone	500	213	1714	1.00 [0.97, 1.01]	0.5234
	1000	216	1714	1.01 [0.99, 1.03]	0.4808
	2000	214	1713	1.00 [0.99, 1.02]	0.7211