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# Consensus Statements on the Definition, Classification, and Diagnostic Tests for Tinnitus: A Delphi Study Conducted by the Korean Tinnitus Study Group



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## ABSTRACT

**Background:** Tinnitus is a bothersome condition associated with various symptoms. However, the mechanisms of tinnitus are still uncertain, and a standardized assessment of the diagnostic criteria for tinnitus is required. We aimed to reach a consensus on diagnosing tinnitus with professional experts by conducting a Delphi study with systematic review of the literature.

**Methods:** Twenty-six experts in managing tinnitus in Korea were recruited, and a two-round modified Delphi study was performed online. The experts evaluated the level of agreement of potential criteria for tinnitus using a scale of 1–9. After the survey, a consensus meeting was held to establish agreement on the results obtained from the Delphi process. Consensus was defined when over 70% of the participants scored 7–9 (agreement) and fewer than 15% scored 1–3 (disagreement). To analyze the responses of the Delphi survey, the content validity ratio and Kendall's coefficient of concordance were evaluated.

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The authors have no potential conflicts of interest to disclose.

#### Author Contributions

Conceptualization: Choo OS, Kim H, Lee SJ, Kim SY, Lee KY, Lee HY, Moon IS, Seo JH, Rah YC, Song JJ, Song JJ, Nam EC, Park SN, Shim HJ. Data curation: Choo OS, Song JJ, Kim H. Formal analysis: Choo OS, Kim H. Funding acquisition: Song JJ, Shim HJ. Investigation: Choo OS, Song JJ, Kim H, Shim HJ. Methodology: Choo OS, Song JJ, Kim H, Shim HJ. Visualization: Choo OS, Song JJ, Shim HJ. Writing original draft: Choo OS. Writing review & editing: Choo OS, Song JJ, Shim HJ.

**Results:** Consensus was reached for 22 of the 38 statements. For the definition of tinnitus, 10 out of 17 statements reached consensus, with three statements achieving complete agreement including; 1) Tinnitus is a conscious perception of an auditory sensation in the absence of a corresponding external stimulus, 2) Tinnitus can affect one's quality of life, and 3) Tinnitus can be associated with hearing disorders including sensorineural hearing loss, vestibular schwannoma, Meniere's disease, otosclerosis, and others. For the classification of tinnitus, 11 out of 18 statements reached consensus. The participants highly agreed with statements such as; 1) Vascular origin is expected in pulse-synchronous tinnitus, and 2) Tinnitus can be divided into acute or chronic tinnitus. Among three statements on the diagnostic tests for tinnitus only Statement 3, "There are no reliable biomarkers for sensory or emotional factors of tinnitus." reached consensus. All participants agreed to perform pure-tone audiometry and tinnitus questionnaires, including the Tinnitus Handicap Inventory and Tinnitus Questionnaire.

**Conclusion:** We used a modified Delphi method to establish a consensus-based definition, a classification, and diagnostic tests for tinnitus. The expert panel reached agreement for several statements, with a high level of consensus. This may provide practical information for clinicians in managing tinnitus.

**Keywords:** Tinnitus; Delphi Study; Systematic Review

## INTRODUCTION

Tinnitus is the conscious awareness of sounds, such as clicking, buzzing, or hissing, in the ears or head without an external sound source.<sup>1</sup> It is estimated that approximately 740 million (14.4%) adults globally are affected by tinnitus, and more than 120 million (2.3%) experience major problems associated with severe tinnitus.<sup>2</sup> Although the condition is common, the impact of tinnitus may vary among individuals. For some patients, tinnitus may be exceedingly troublesome and associated with negative effects in everyday life, including frustration, anxiety, depression, irritability, hyperacusis, disruption of sleep cycle, concentration difficulties, and social isolation.<sup>3-5</sup> Thus, tinnitus is a highly prevalent and distressing condition with a wide range of symptoms and various causes.

Tinnitus can be a result of pathological changes along any of the auditory pathways, and non-auditory conditions can also cause symptoms.<sup>6</sup> Previous studies of the causes of tinnitus, especially in neuroscience, have revealed possible mechanisms for tinnitus.<sup>1,7-10</sup> However, these mechanisms are still not sufficient to comprehensively define tinnitus owing to its highly heterogeneous physiopathology.

In 2014, an evidence-based clinical practice guideline for tinnitus was published by the American Academy of Otolaryngology-Head and Neck Surgery Foundation. The study classified primary and secondary tinnitus, and defined recent-onset and persistent tinnitus according to a 6-month time period.<sup>11</sup> Clinical guidelines for the diagnosis and treatment of tinnitus have also been published in Europe and Japan,<sup>12,13</sup> and an international multidisciplinary proposal for theoretical and operational definitions of tinnitus and tinnitus disorder was suggested in 2021.<sup>14</sup> However, there remains uncertainty and a lack of standardized assessment of the diagnostic criteria for tinnitus. Thus, there is an urgent need to reach agreement on the definition, classification, and diagnosis of tinnitus suitable for clinical and research fields. In this study, we aimed to reach a consensus on the proper diagnosis of tinnitus among professional experts with current experience in managing

tinnitus. For this purpose, a two-round Delphi survey was conducted by the Korean Tinnitus Study Group with systematic review of the literature.

## METHODS

### Study design

The present study followed the Delphi methodology. The Delphi technique is an iterative process using a series of questionnaires to gather opinions and controlled feedback from a panel of experts to reach a consensus on a topic.<sup>15</sup> A two-round modified Delphi survey was used to seek clinical consensus on the definition, classification, and diagnostic tests for tinnitus by an expert panel of otology professionals. The procedure for this Delphi study is shown in Fig. 1.

### Systematic review

In preparation for the Delphi survey, three reviewers conducted a comprehensive review of relevant literature. The reviewers examined a total of 15 Cochrane reviews published after 2010, as well as 23 review articles, and 10 randomized controlled studies identified through searches on PubMed.

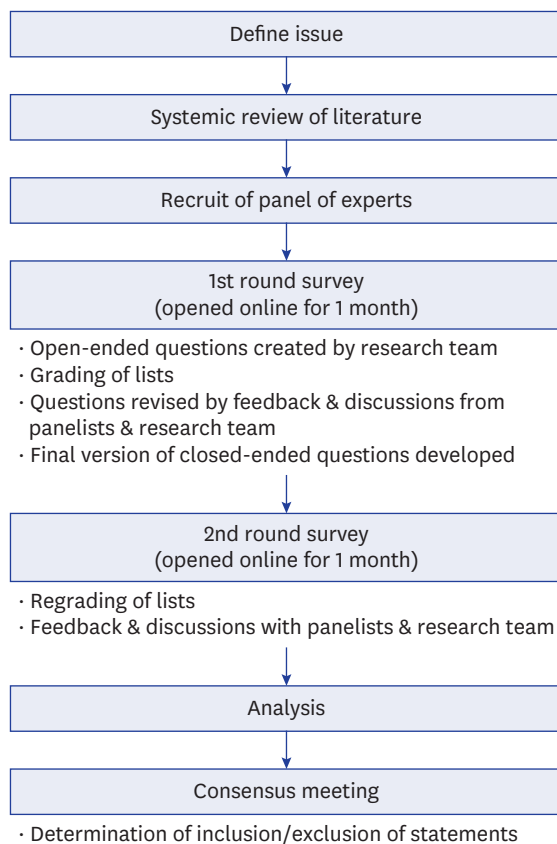


Fig. 1. Review of the Delphi study process.

### Recruitment of panelists

The study was conducted in 2021, and experts in managing tinnitus in Korea were recruited as panelists for the Delphi survey. Initially, invitation emails were sent to members of the Korean Tinnitus Study Group associated with the Korean Otological Society. In addition, experts who agreed to participate in the study shared the invitation emails with other appropriate professionals who were managing tinnitus in clinical settings. The online Delphi survey contained information on the aims and process of the study. Only participants who completed Round 1 were qualified to participate in Round 2.

### The Delphi survey

A two-round modified Delphi survey was used in this study. The Delphi survey was classified into the definition, classification, and diagnostic tests for tinnitus. Both rounds of the Delphi survey were administered as online surveys distributed through personalized links by email. Demographic information about the participants was collected, including their age, job role, work place (public or private hospitals), and years in the profession. The responses of the participants and survey results were presented anonymously.

In Round 1, a total of 27 experts participated to evaluate their level of agreement with potential diagnostic criteria for tinnitus. Participants scored each outcome domain on a scale of 1–9.<sup>16</sup> Additional interpretation categories were used for scoring: 1–3 indicated high disagreement for diagnosis of tinnitus, 4–6 indicated important but not critical for diagnosis of tinnitus, and 7–9 indicated high agreement for diagnosis of tinnitus. All experts could provide additional comments or opinions about the potential criteria in free-text comments.

The results from Round 1 survey were presented at an online meeting with all participants, during which additional suggestions and comments were discussed to encourage the participants to reflect on their opinions and answers. The meeting was intended to allow participants to consider the suggestions provided by their peers and subsequently reevaluate and score each item. Consequently, the survey questions were revised based on the discussions held during this meeting. The Round 2 survey was conducted using the revised questionnaire, with a total of 26 participants.

### Consensus meeting

Following the survey, an online consensus meeting was held to establish agreement with the results obtained from the Delphi process. Based on these results, recommendations were made for the inclusion of the definition, classification, and diagnostic tests for tinnitus. A consensus criterion for tinnitus was predefined when over 70% of the participants scored 7–9, indicating agreement, and fewer than 15% scored 1–3, indicating disagreement. Similarly, a recommendation for exclusion was predefined when more than 70% of the participants scored 1–3, and fewer than 15% scored 7–9.

### Level of agreement

To justify the responses of the two-round modified Delphi survey, content validity ratio (CVR) and Kendall's coefficient of concordance ( $W$ ) were evaluated. A significant level of agreement was achieved when the CVR was  $\geq 0.37$  ( $P < 0.05$ ). The value of  $W$  ranges from 0 to 1, and a value closer to 1 indicates greater convergence of the level of opinion.<sup>17</sup> In other words,  $W$  of 0.9 indicates unusually strong agreement; 0.7 indicates strong agreement; 0.5 indicates moderate agreement; 0.3 indicates weak agreement; and 0.1 indicates very weak agreement with no confidence in ranks.<sup>17</sup>

## RESULTS

The Delphi survey was conducted from July 2021 to October 2021. Initially, 40 statements for the definition, classification, and diagnostic tests for tinnitus were presented in Round 1. The online meeting after Round 1 allowed the panel to reflect on the suggestions and comments from other members of the panel. Similar statements were combined and duplicative questions were removed, leaving a total of 38 statements for assessment (Table 1).<sup>18-38</sup>

A total of 22 statements (58%) met the standardized diagnosis criteria for consensus and 16 statements (42%) did not.

Regarding the definition of tinnitus, 10 out of 17 statements reached consensus (Table 2). Three statements reached the criteria of consensus unanimously: Statement 1, *Tinnitus is a conscious perception of an auditory sensation in the absence of a corresponding external stimulus*; Statement 12, *Tinnitus can affect one's quality of life*; and Statement 15, *Tinnitus can be associated with hearing disorders including sensorineural hearing loss, vestibular schwannoma, Meniere's disease, otosclerosis, and others*. In contrast, the definition for clinically significant tinnitus had the highest disagreement.

Eleven out of 18 statements reached consensus regarding the classification of tinnitus (Table 3). The classification of objective and subjective tinnitus, definition of somatosensory tinnitus, and time-period of acute and chronic tinnitus showed high agreement. However, opinions were divided on the classification of central and peripheral tinnitus (agreement: 46.2%; disagreement: 23.0%). Statement 10, defining the origin of peripheral tinnitus, nearly reached consensus with agreement of 73.1%.

Three statements regarding diagnostic tests for tinnitus were evaluated. Only Statement 3, *There are no reliable biomarkers for sensory or emotional factors of tinnitus*, reached consensus (Table 4). A fourth question was added to choose from all potential diagnostic tests for tinnitus. Among 19 diagnostic tests, all the participants agreed to perform pure-tone audiometry and tinnitus questionnaires, such as the tinnitus handicap inventory or tinnitus questionnaire (Table 5).

Kendall's coefficient of concordance ( $W$ ) was also analyzed to justify the level of agreement. The overall value was 0.502, indicating moderate agreement between participants with classification of tinnitus presenting with the lowest value (0.369, weak agreement) (Table 6).

## DISCUSSION

The aim of this study was to establish clinical consensus on the definition, classification, and diagnostic tests for tinnitus. Although tinnitus is a common auditory symptom, clinicians and experts often use their own criteria to manage patients with tinnitus. The variable definitions and descriptions for tinnitus probably arise from the condition's subjective findings, heterogeneous symptoms, and diversity of associated conditions. This may lead to difficulties in selecting appropriate outcome measures and effective treatment options for tinnitus.

In this Delphi study, the majority of statements reached or nearly reached consensus on the definitions of tinnitus derived from published literature.<sup>6,14,18-22,26-30</sup> However, the participants had diverse opinions regarding the definition of "clinically significant

**Table 1.** Questionnaire for Round 1 of the Delphi Survey

No.	Ref.	Definition/Classification/Diagnostic tests <sup>a</sup>	7-9 (agreement)	4-6	1-3 (disagreement)
1	6-18-20	Tinnitus is a conscious perception of an auditory sensation in the absence of a corresponding external stimulus.	100.0%	0%	0%
2	14	Tinnitus is a nonspecific symptom of a hearing disorder characterized by the sensation of buzzing, ringing, clicking, pulsations, and other noises in the ear.	96.2%	3.8%	0%
3	21	Tinnitus is described by its perceptual characteristics including localization, intensity, frequency and timbre.	50.0%	38.5%	11.5%
4	14-21-22	Tinnitus is the conscious awareness of a constant or intermittent sound that has no intrinsic meaning.	92.3%	0%	7.7%
5	23-24	Clinically significant tinnitus is defined as tinnitus $\geq$ 5 min presented within 3 months.	50.0%	34.6%	15.4%
6	23-24	Clinically significant tinnitus is defined as tinnitus $\geq$ 5 min presented within 1 month.	57.7%	26.9%	15.4%
7	24-25	Tinnitus occurs more than once a week.	34.6%	42.3%	23.1%
8	26	Tinnitus is an auditory symptom.	88.5%	7.7%	3.8%
9	26	Tinnitus is an auditory disease.	46.1%	38.5%	15.4%
10	26	Tinnitus is a psychiatric disease.	7.7%	26.9%	65.4%
11	14-27	Tinnitus disorder is the conscious awareness of a tonal or composite noise for which there is no identifiable corresponding external acoustic source, with associated suffering.	96.2%	0%	3.8%
12	21-28	Tinnitus can affect one's quality of life.	100.0%	0%	0%
13	29	Tinnitus can be associated with hyperacusis.	96.2%	3.8%	0%
14	14-26	Tinnitus can be associated with anxiety, depression, and neuropsychiatric conditions, such as bipolar disorder.	92.3%	7.7%	0%
15	14-26	Tinnitus can be associated with hearing disorders including sensorineural hearing loss, vestibular schwannoma, Meniere's disease, otosclerosis, and others.	100.0%	0%	0%
16	30	Subclassification of tinnitus according to intensity, frequency, and perceptual characteristics is required.	46.2%	31.7%	23.1%
17	30	Subclassification of tinnitus according to presence of psychiatric symptoms, effect on quality of life, and severity of other accompanying symptoms is required.	84.6%	11.5%	3.8%
18	14	Tinnitus can be divided into subjective and objective tinnitus.	92.3%	3.8%	3.8%
19	14	Objective tinnitus is described as tinnitus that can be attributed to an internal sound source.	92.3%	3.8%	3.8%
20	14	Subjective tinnitus is the conscious awareness of a constant or intermittent sound that has no intrinsic meaning and for which there is no identifiable corresponding external (to the body) sound source.	80.8%	15.4%	3.8%
21	14	Objective tinnitus includes tinnitus of vascular, myoclonus, and eustachian tube origin with intermittent sound.	84.6%	7.7%	7.7%
22	14	A vascular origin (hypertension, dehiscence, diverticulum, fistula, tumor, aneurysm, stenosis, etc.) is expected in pulse-synchronous tinnitus.	96.2%	3.8%	0%
23	31-32	Objectively measurable neuronal correlates of subjective tinnitus are being developed.	42.3%	46.2%	1.5%
24	14	Alternative terms for "subjective tinnitus" and "objective tinnitus" could be "primary tinnitus" and "secondary tinnitus."	38.5%	38.5%	23.0%
25	11	Secondary tinnitus can be associated with auditory and non-auditory systems other than sensorineural hearing loss.	65.4%	19.2%	15.4%
26	33	Tinnitus related to hearing loss can be divided into central and peripheral tinnitus according to the cause and location of tinnitus.	46.2%	30.8%	23.0%
27	34-35	Peripheral tinnitus originates from the dysfunction of cochlear outer hair cells and the consequent changes in endocochlear potential, leading to increased spontaneous cochlear activity.	73.1%	19.2%	7.7%
28	8-35	Central tinnitus refers to the auditory perception that is generated in auditory brain centers by the aberrant neural activity and is sustained by that aberrant neural activity.	69.2%	23.1%	7.7%
29	21	Tinnitus may also result from a dysfunction of non-auditory pathways related to the auditory system.	84.6%	15.4%	0%
30	21-36	Somatosensory tinnitus is caused by a change in the auditory neural pathway via somatic action of the head and neck region.	92.3%	7.7%	0%
31	33	Somatosensory tinnitus is modulated by movements of the neck, jaw, head, or eyes without auditory changes and is related to head and neck or jaw disorders in a timely manner.	92.3%	7.7%	0%
32	37	Tinnitus can be divided into transient and permanent tinnitus.	88.5%	11.5%	0%
33	38	Tinnitus can be divided into acute or chronic tinnitus.	96.2%	3.8%	0%
34	38	Acute tinnitus refers to tinnitus $<$ 1 month, and chronic tinnitus refers to tinnitus $\geq$ 3 months.	80.8%	19.2%	0%
35	38	Acute tinnitus refers to tinnitus $<$ 3 months, and chronic tinnitus refers to tinnitus $\geq$ 3 months.	34.6%	26.9%	38.5%
36	31	The presence or severity of tinnitus can be evaluated through radiological biomarkers via MRI.	7.7%	50.0%	42.3%
37	32	The presence or severity of tinnitus can be evaluated through electroencephalography.	11.5%	38.5%	50.0%
38	14	There are no reliable biomarkers for sensory or emotional factors of tinnitus.	88.5%	7.7%	3.8%

<sup>a</sup>No. 1-17, definition; No. 18-35, classification; No. 36-38, diagnostic tests.

**Table 2.** Statements of inclusion criteria: definition of tinnitus

No.	Statement	Mean	CVR
1	Tinnitus is a conscious perception of an auditory sensation in the absence of a corresponding external stimulus.	8.7	1.000
2	Tinnitus is a nonspecific symptom of a hearing disorder characterized by the sensation of buzzing, ringing, clicking, pulsations, and other noises in the ear.	8.5	0.923
4	Tinnitus is the conscious awareness of a constant or intermittent sound that has no intrinsic meaning.	8.3	0.846
8	Tinnitus is an auditory symptom.	7.9	0.769
11	Tinnitus disorder is the conscious awareness of a tonal or composite noise for which there is no identifiable corresponding external acoustic source, with associated suffering	7.9	0.923
12	Tinnitus can affect one's quality of life.	8.8	1.000
13	Tinnitus can be associated with hyperacusis.	8.5	0.923
14	Tinnitus can be associated with anxiety, depression, and neuropsychiatric conditions, such as bipolar disorder.	8.3	0.846
15	Tinnitus can be associated with hearing disorders including sensorineural hearing loss, vestibular schwannoma, Meniere's disease, otosclerosis, and others.	8.7	1.000
17	Subclassification of tinnitus according to presence of psychiatric symptoms, effect on quality of life, and severity of other accompanying symptoms is required.	7.4	0.692

CVR = content validity ratio.

**Table 3.** Statements of inclusion criteria: classification of tinnitus

No.	Statement	Mean	CVR
1	Tinnitus can be divided into subjective and objective tinnitus.	8.1	0.846
2	Objective tinnitus is described as tinnitus that can be attributed to an internal sound source.	8.0	0.846
3	Subjective tinnitus is the conscious awareness of a constant or intermittent sound that has no intrinsic meaning and for which there is no identifiable corresponding external (to the body) sound source.	7.5	0.615
4	Objective tinnitus includes tinnitus of vascular, myoclonus, and eustachian tube origin with intermittent sound.	7.4	0.692
5	A vascular origin (hypertension, dehiscence, diverticulum, fistula, tumor, aneurysm, stenosis, etc.) is expected in pulse-synchronous tinnitus.	8.3	0.923
12	Tinnitus may also result from a dysfunction of non-auditory pathways related to the auditory system.	7.7	0.692
13	Somatosensory tinnitus is caused by a change in the auditory neural pathway via somatic action of the head and neck region.	7.9	0.846
14	Somatosensory tinnitus is modulated by movements of the neck, jaw, head, or eyes without auditory changes and is related to head and neck or jaw disorders in a timely manner.	8.0	0.846
15	Tinnitus can be divided into transient and permanent tinnitus.	7.8	0.769
16	Tinnitus can be divided into acute or chronic tinnitus.	8.2	0.923
17	Acute tinnitus refers to tinnitus < 1 month, and chronic tinnitus refers to tinnitus ≥ 3 months.	7.8	0.615

CVR = content validity ratio.

**Table 4.** Statements of inclusion criteria: diagnostic tests of tinnitus

No.	Diagnostic tests	Mean	CVR
3	There are no reliable biomarkers for sensory or emotional factors of tinnitus.	7.7	0.769

CVR = content validity ratio.

**Table 5.** Diagnostic tests for tinnitus

Ranking	Possible diagnostic tests	Agreement
1	Pure tone audiometry (PTA)	26 (100%)
1	Tinnitus questionnaire (THI, TQ)	26 (100%)
3	Tinnitus severity scale (visual analogue scale, numeric rating scale)	25 (96.2%)
3	Questionnaire fore associated symptoms	25 (96.2%)
5	High frequency PTA	24 (92.3%)
6	Otoacoustic emission	23 (88.5%)
7	Computed tomography	22 (84.6%)
8	Otoendoscopic examination	21 (80.8%)
9	Head and neck inspection	20 (76.9%)
9	Tinnitogram	20 (76.9%)
9	Auditory steady-state response	20 (76.9%)

**Table 6.** Kendall's coefficient of concordance (*W*)

Theme	Kendall's <i>W</i>
Overall	0.502
Definition	0.540
Classification	0.369
Diagnostic tests	0.763

tinnitus.”<sup>23-25</sup> In a systematic review reporting the prevalence and severity of tinnitus, 12 out of 35 studies defined tinnitus as lasting for more than 5 min, and the prevalence rates varied widely, ranging from 11.9% to 30.3%.<sup>23</sup> In another study on the prevalence of tinnitus in children, tinnitus occurring more than once a week was found to be clinically significant.<sup>25</sup> Clinically significant tinnitus occurring more than once a week also appears to have stronger associations with chronic pain.<sup>24</sup> The definition of clinically significant tinnitus or bothersome tinnitus with associated distress is important when selecting from the treatment options. Treatment of tinnitus with associated distress may include reassurance and counseling, sound therapy, and/or psychological therapy.<sup>39</sup>

In 2021, De Ridder et al.<sup>14</sup> suggested alternative terms for subjective and objective tinnitus of primary and secondary tinnitus. The term subjective tinnitus may be misleading to some extent, since objective measures, such as neural correlates of tinnitus, are being developed. Although tinnitus can be classified in several ways based on different characteristics, the most common classification mainly distinguishes subjective tinnitus from objective tinnitus. Our expert panel also had divergent opinions on this statement (Statement 7), emphasizing the need for a more coherent definition and classification of tinnitus.

Other statements in the classification of tinnitus also showed low levels of agreement, including Statement 9, *Tinnitus related to hearing loss can be divided into central and peripheral tinnitus according to the cause and location of tinnitus*, which had the most diverse opinions. One classification method for tinnitus is based on the origin of the tinnitus related to the site of the auditory impairment, dividing the condition into peripheral and central tinnitus.<sup>40</sup> Tinnitus may originate from synapses between inner hair cells, the auditory nerve, or even from the central structures of the auditory system. Chronic persistent tinnitus is likely to be a function of a complex network of structures in both the central auditory system and non-auditory systems. Therefore, a clear classification for central and peripheral tinnitus with hearing loss is yet to be developed and understood.

Previously, recent-onset or acute tinnitus was defined as the onset of tinnitus within 6 months, and persistent or chronic tinnitus was defined as tinnitus lasting for more than 6 months.<sup>11</sup> However, our level of agreement resulted in different durations, with less than 1 month defined as acute tinnitus and more than 3 months defined as chronic tinnitus. Other studies have also reported different time-periods, ranging from 3 to 12 months, for defining acute and chronic tinnitus.<sup>14,41,42</sup> Therefore, the exact time boundary for acute and chronic tinnitus needs to be standardized in future studies.

Regarding the diagnostic tests for tinnitus, most of the panel members agreed that there are still no reliable biomarkers for detecting the presence or severity of tinnitus. Nevertheless, several potential diagnostic tests were selected, with more than 75% of the panel agreeing on 13 diagnostic tests or assessments.

The primary goal of a Delphi study is to develop a reliable consensus opinion from a group of experts through a series of intensive questionnaires and controlled feedback.<sup>43</sup> Characteristics of the Delphi technique include its anonymity, iteration, controlled feedback, and statistical group response. To forge a consensus opinion or mutual agreement/disagreement, consensus measures are also important in Delphi research. In Round 2 of our survey, we utilized a non-parametric statistic, Kendall's coefficient of concordance ( $W$ ), to measure the relative strength of agreement among experts. A high or significant  $W$  value



indicates that participants apply the same standard in determining the importance of the related issues and are in agreement.

The present Delphi study was conducted exclusively with Korean experts to establish consensus on the definition, classification, and diagnostic tests for tinnitus, and the survey was conducted in Korean. Consequently, the current consensus statement may primarily reflect the perspectives of Korean clinicians, and it is likely that diverse opinions may exist among professionals in different countries.

The current study used a modified Delphi method to establish a consensus-based definition, a classification, and diagnostic tests for tinnitus. Through this process, a set of statements was agreed upon with a high level of agreement. Three statements reached complete agreement for definition of tinnitus including; 1) Tinnitus is a conscious perception of an auditory sensation in the absence of a corresponding external stimulus, 2) Tinnitus can affect one's quality of life, and 3) Tinnitus can be associated with hearing disorders including sensorineural hearing loss, vestibular schwannoma, Meniere's disease, otosclerosis, and others. Diverse opinions were noted for classification of tinnitus with Statement 5 "A vascular origin is expected in pulse-synchronous tinnitus." and Statement 16 "Tinnitus can be divided into acute or chronic tinnitus." showing the highest agreement of consensus (96.2%). Diagnostic tests for tinnitus requires further research and investigation as most of the statements were not able to reach consensus, and pure tone audiometry and tinnitus questionnaires were the only tests that reached complete agreement among 19 potential diagnostic evaluations.

It is expected that these criteria-based statements will become widely accepted within the clinical field, and serve as a fundamental step toward the development of guidelines for the effective management of tinnitus.

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