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# A survey-based assessment of attitudes and needs regarding tinnitus healthcare among patients and healthcare professionals in Europe

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Despite good agreement of national guidelines for the assessment and treatment of tinnitus, there is still substantial variation regarding tinnitus-related healthcare across Europe. In contrast to previous work, which has mainly focussed on the perspective of healthcare professionals, we here report the results of separate web-based surveys conducted with clinicians and researchers as well as tinnitus patients. These surveys were devised to obtain information about their respective attitudes and needs with respect to tinnitus healthcare, and to reveal possible interdisciplinary inconsistencies among clinicians and researchers. We mainly targeted participants from Germany, Cyprus, and Greece, the countries in which the institutions of the researchers involved in this project are based. Results showed, firstly, that the treatment satisfaction of the patients was overall more negative than that of the clinicians and researchers, and that the patients' treatment satisfaction did not depend on the number of different treatments they had received. Secondly, patients as well as clinicians and researchers indicated that they were interested in learning more about a variety of tinnitus-related topics, especially treatment strategies, with no marked differences between clinicians from different professional disciplines. This suggests similar tinnitus-specific educational needs in patients and healthcare professionals.

## KEYWORDS

public health, healthcare, hearing loss, web-based survey, epidemiology

## 1 Introduction

Tinnitus represents a major health issue, with recent estimates suggesting a prevalence of almost 15% among European adults (Biswas et al., 2022). The likelihood for the occurrence of tinnitus increases with age and the degree of hearing loss, and for patients with profound bilateral sensorineural hearing loss, a prevalence of more than 80% has been

reported (Baguley et al., 2013). The term tinnitus refers to the perception of a tone- or noise-like sound in the absence of an external auditory stimulus (Langguth et al., 2013; Bauer, 2018). In a small subset of the adult population, estimated to be about 1.2% in Europe (Biswas et al., 2022), tinnitus causes severe distress. It has therefore been suggested to distinguish between tinnitus as such and tinnitus-related suffering by referring to the latter as “tinnitus disorder” (De Ridder et al., 2021).

Current clinical guidelines for the assessment and treatment of tinnitus (Cima et al., 2019; Mazurek et al., 2022) recommend a multi-disciplinary approach involving professionals with medical, audiological, and psychological backgrounds. For diagnostic purposes, anamnesis, otorhinolaryngological and audiological examinations, as well as measuring the tinnitus-related distress level via standardized questionnaires are advised. The subsequent tinnitus treatment should involve education and counseling, followed by psychotherapeutic intervention and, if required, measures to compensate for hearing loss. Drug treatment is only recommended for acute tinnitus and in case of psychiatric comorbidities in chronic tinnitus persisting for more than 3 months. However, despite good agreement of the clinical guidelines across countries (Fuller et al., 2017), a standardized approach to the assessment and treatment of tinnitus across Europe is still lacking (Cima et al., 2020).

Striking differences regarding the tinnitus-related healthcare across Europe were revealed by two web-based surveys conducted with healthcare professionals (Hall et al., 2011; Cima et al., 2020). The survey by Cima et al. (2020) included clinicians, researchers, and policy makers from a wide range of European countries, while Hall et al. (2011) focused on general practitioners and ear-nose-throat (ENT) specialists from a number of European countries (Germany, UK, France, Italy, and Spain) and the US. Key findings were that, regardless of the type of intervention, the treatment success rate was judged to be low and that medication-based treatments were less common in northern Europe, as compared to southern (Hall et al., 2011) and especially eastern European countries (Cima et al., 2020). Moreover, in northern Europe, multi-disciplinary teams including psychologists were more common and the satisfaction with the tinnitus treatment provided by their institution was markedly higher (Cima et al., 2020). Crucially, both surveys did not consider the patients' opinions, but had healthcare professionals answering on their behalf. In contrast, surveys among European tinnitus patients have primarily focused on either prevalence and socio-economic variables (Biswas et al., 2022), the tinnitus-related healthcare system in the UK (McFerran et al., 2018), or how the patients' needs with regard to tinnitus-specific healthcare changed during the COVID-19 pandemic (Beukes et al., 2021). In the latter survey, small subsets of patients expressed a need for more information, better access to experts, and more support with respect to hearing protection when asked about suggestions for improving tinnitus-related healthcare. However, due to the open-answer format used by Beukes et al. (2021), the actual proportions might have been underestimated and the data were mainly gathered in three smaller European countries (The Netherlands, Belgium, and Sweden). Moreover, neither of these three patient surveys considered their treatment satisfaction.

In the current study, we present the results of separate web-based surveys with tinnitus patients as well as clinicians involved in tinnitus treatment and tinnitus researchers. These surveys were devised and conducted to (a) identify the patients' attitudes and needs with regard to tinnitus healthcare and (b) to reveal attitudes toward tinnitus healthcare, as well as educational needs and possible interdisciplinary inconsistencies among clinicians and researchers. While the patient survey by Beukes et al. (2021) revealed some insights regarding the patients' needs, neither of the two previous surveys conducted with tinnitus healthcare professionals (Hall et al., 2011; Cima et al., 2020) contained information on their educational needs and possible differences across professional disciplines. The present surveys and their analyses were conducted within the framework of the Erasmus+ project “Interprofessional Training for Tinnitus Researchers and Clinicians” (Tin-TRAC; Paraskevopoulos et al., 2022) and represent the first project outcome, i.e., the educational need analysis. Instead of grouping subsets of European countries into regions (cf., Cima et al., 2020; Biswas et al., 2022), we focused on the three EU countries in which the members of the Tin-TRAC network are based (Germany, Cyprus, and Greece).

## 2 Materials and methods

### 2.1 Surveys

Three separate web-based surveys were devised by the members of the Tin-TRAC project to gather information from tinnitus patients, clinicians working with tinnitus patients, and researchers investigating tinnitus. All three surveys comprised sections on the diagnosis and treatment of tinnitus, tinnitus-related knowledge, the healthcare system, and general information about the participants. The individual items of each survey were modified to suit the respective target population. The surveys were implemented using the software *SoSci Survey* (Munich, Germany; version 3.4.22) and hosted on a web server of Charité—Universitätsmedizin Berlin (<https://survey.charite.de>). On average, it took the participants about 8 min to complete the surveys, when accounting for interruptions. The surveys were available in three different languages (German, Greek, and English), as they were mainly aimed at participants from Germany, Greece, and Cyprus. Data was collected from 05/07/2022 to 30/09/2023. Local otolaryngologic and psychosomatic clinics, university departments and associations as well as international colleagues of the members of the Tin-TRAC project were contacted to distribute the survey invitations among their patients, clinicians and researchers via newsletter, websites, and social media.

The resulting data were processed and visualized in R (version 4.3.0) using the packages *readxl*, *dplyr*, *tidyr*, *forcats*, *stringr*, *data.table*, and *ggplot2*.

### 2.2 Participants

The final samples consisted of 221 patients (112 females, 109 males), 146 clinicians (74 females, 67 males, 5 NA), and

16 researchers (eight females, eight males). Participants who did not confirm that they were at least 18 years old and wanted to participate voluntarily, did not finish the survey, or were not from a European country were excluded. Likewise, patients who did not indicate to have tinnitus for at least 5 min per day on most days, clinicians that have not worked with tinnitus patients, and researchers that have not done tinnitus-related research were excluded. In total, 113 patients, 42 clinicians, and 34 researchers did not meet the inclusion criteria and were omitted from the initial samples. All subjects participated anonymously, and the study was approved by the local ethics committee (Charité—Universitätsmedizin Berlin, No. EA1/126/22).

## 3 Results

### 3.1 Patient survey

The large majority (94.1%, 208/221) of tinnitus patients in the final sample were from Germany, Cyprus, and Greece, with the remaining participants spread across several other European countries (Figure 1A). The data from these other European countries were therefore merged for the analyses. Overall, the number of patients increased with age, and most were older than 50 years (Figure 1B, left panel). Most patients (62%) reported a constant rather than an intermittent tinnitus, and about a third (35%) considered their tinnitus to be a big or very big problem.

Regarding the diagnostic techniques used, hearing tests via a standard audiogram (79% of patients), ENT medical examinations (76%), and anamnesis by an ENT doctor (67%) were most common (Figure 1C). The proportions for the range of different techniques were largely similar across countries, except for the more frequent use of advanced audiological tests such as tinnitus frequency and loudness matching, speech audiometry, and minimum masking level in Germany (85% of uses for these three techniques, 147/172).

The ratings of the satisfaction with the tinnitus treatment options available in the respective countries showed that most patients had a neutral or negative attitude (90%; Figure 1B, right panel). While there were no pronounced differences between age groups, a country-specific effect was evident as the majority of Greek patients (77%, 23/30) gave a neutral treatment satisfaction rating. However, the more positive ratings among the Greek patients were not reflected in the number of different treatments they had actually received (Figure 1D, lower left panel). Here, both the Greek and Cypriot patients reported a markedly lower number of received treatments (0.6 and 0.9 on average, respectively) than the German patients (3.8). Most Greek and Cypriot patients in fact reported not having received any treatment at all (60 and 52%, respectively). Regarding the range of different treatment techniques used (Figure 1D, pie charts), there was less diversity in Greece ( $n = 7$ ), as compared to Cyprus ( $n = 14$ ) and Germany ( $n = 17$ ), and the use of medications and dietary supplements was by far the most common form of treatment in Greece (44%, 8/18 treatments).

Finally, the educational needs of the patients were assessed (Figure 1E). Overall, the patients were interested in learning more about a variety of topics, particularly strategies of treatment (78%). However, the Greek patients in total only gave 1.8 votes per person, as opposed to more than 3 for the other countries (Germany = 3.1,

Cyprus = 3.4, and Other = 3.7), indicating that they were generally less interested in learning more about tinnitus-related topics.

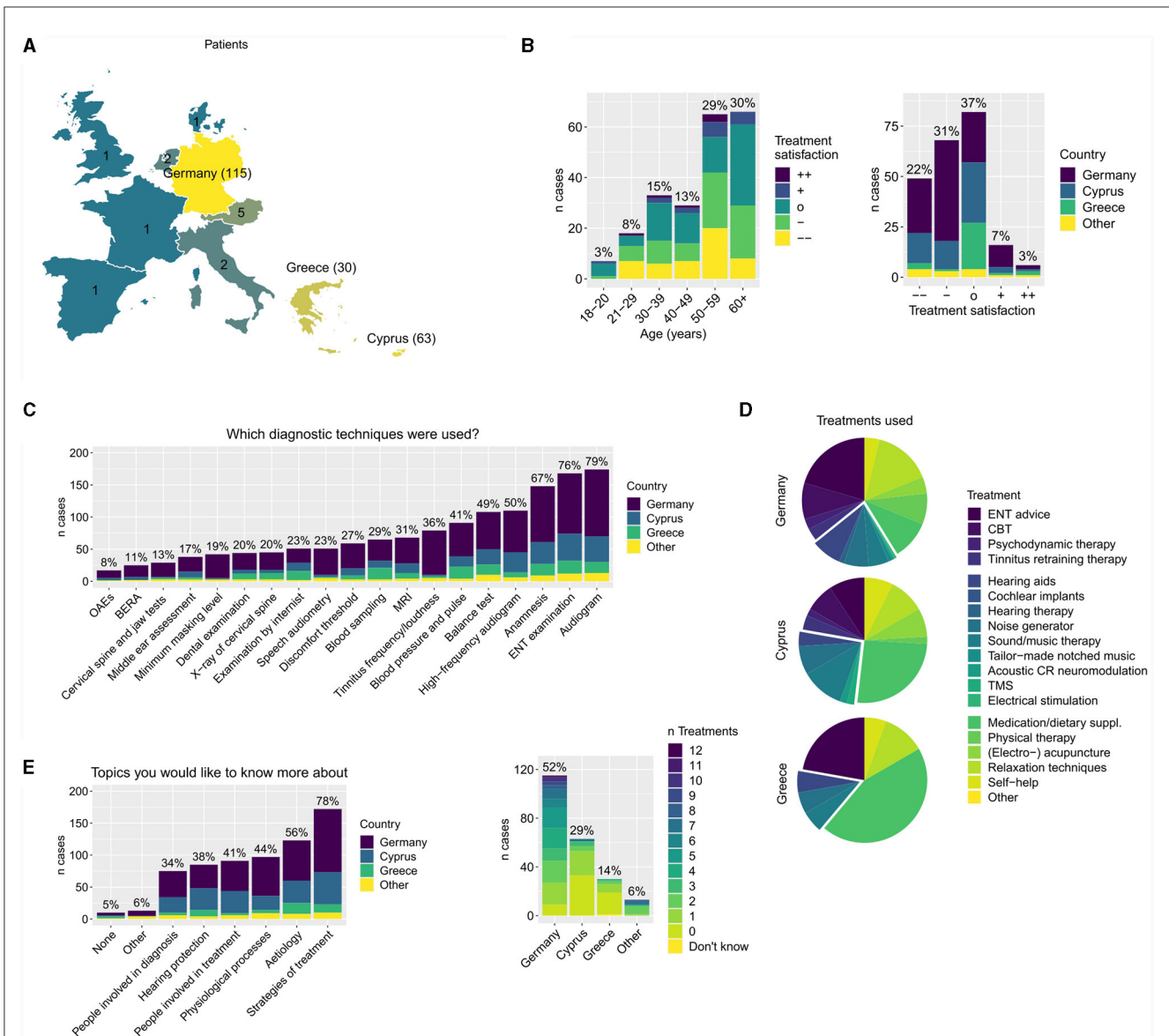
### 3.2 Clinician and researcher surveys

In total, 82% (120/146) of the clinicians were from Germany, Cyprus, and Greece, with the remainder scattered over a wide range of other European countries (Figure 2A). However, there were markedly fewer clinicians from Cyprus ( $n = 8$ ) than from Germany and Greece (65 and 47, respectively). In contrast, the majority of the researchers were from Germany (81%, 13/16), with no participants from either Cyprus or Greece. Due to the small overall number of researchers that participated, the clinician and researcher data were pooled together for the analyses. Overall, the number of clinicians and researchers per age group increased sharply from those in their twenties to those in their thirties and then decreased steadily (Figure 2B, left panel).

In line with the patient data, anamnesis by an ENT doctor (96% of clinicians/researchers), hearing tests via a standard audiogram (88%), and ENT medical examinations (86%) were indicated to be the most frequently used diagnostic techniques (Figure 2C). Same as the patients, the clinicians and researchers reported that the use of advanced audiological tests such as tinnitus frequency and loudness matching, speech audiometry, and minimum masking level was more common in Germany (66% of uses for these three techniques, 150/229). These findings thus suggest a good agreement of the clinician and researcher data with the patient survey. For more technical diagnostic techniques such as otoacoustic emissions and brainstem evoked response audiometry (OAEs and BERA), in contrast, large discrepancies were evident. While the clinicians and researchers reported a frequent use of these techniques (44 and 40%, respectively), few of the patients did (8 and 11%; Figure 1C).

Regarding the satisfaction with the tinnitus treatment offered in their institution, most clinicians and researchers gave ratings in the medium range (81% in central three categories; Figure 2B, right panel), in sharp contrast to the mostly negative satisfaction ratings of the patients (Figure 1D, upper left). Furthermore, there was a trend for better satisfaction ratings with increasing age (Figure 2B, left panel), as reflected in predominantly neutral and positive ratings among clinicians and researchers older than 60 years (86% in highest three categories, 24/28). Concerning Germany and Greece, the two countries with the highest numbers of participants, satisfaction ratings were higher for the former, even though the clinicians indicated less time per patient (51% < 15 min; Figure 2D, upper left) and a greater number of patients per week in Germany (62% > 5 per week; Figure 2D, upper right). With respect to the treatment techniques used by the clinicians, the proportions were largely similar across countries (Figure 2D, pie charts). However, compared to the patients (Figure 1D), the clinicians indicated a more frequent use of hearing-related and neuroscientific treatment techniques. For the clinicians, these techniques amounted to 45% of the total across countries, as compared to only 22% among the patients. The respective segments are highlighted by thick white lines in the pie charts in Figure 2D.

The educational needs of the clinicians and researchers were largely in line with those of the patients. They were



**FIGURE 1** Patient survey. **(A)** Counts of patient nationalities. **(B)** Age distribution of patients, with colors indicating satisfaction with treatment options available in respective country (left). Treatment option satisfaction per country (right). **(C)** Overall percentages and counts of diagnostic techniques used per country. **(D)** Number of different treatments received per country (lower left), and pie charts showing the proportion of specific treatments in the total number of treatments per country (right). Segments comprising hearing-related and neuroscientific treatment techniques are highlighted by thick white lines. **(E)** Counts of tinnitus-related topics the patients would like to know more about. OAEs, otoacoustic emissions; BERA, brainstem evoked response audiometry; MRI, magnetic resonance imaging; ENT, ear, nose, and throat; CBT, cognitive behavioral therapy; TMS, transcranial magnetic stimulation.

interested in learning more about a variety of tinnitus-related topics, especially strategies of treatment (79%), with no marked differences between countries (Figure 2E, left panel). Similarly, the satisfaction with the tinnitus-related education received did not differ substantially across countries (Figure 2E, right panel). Most clinicians and researchers (80%) chose the medium three categories, demonstrating that the lower treatment satisfaction ratings in Greece compared to Germany (Figure 2B, left) are unlikely to be due to a perceived lower quality of their education.

Further country-specific differences emerged concerning the professional backgrounds of the clinicians and researchers. While

an ENT or otolaryngology background was by far the most common overall (69%), almost all Greek participants fell into this category (96%), compared to only 63% of the German clinicians and researchers. In turn, 23% of the German participants indicated a background in psychology, psychiatry, or psychosomatics, as compared to 0% in Greece. Finally, there was a striking difference regarding the existence of a multi-disciplinary approach to the treatment of tinnitus in their countries, which was confirmed by the majority of the German clinicians and researchers (77%) but only a minority of the Greek participants (21%). Although the clinicians and researchers that confirmed a multi-disciplinary

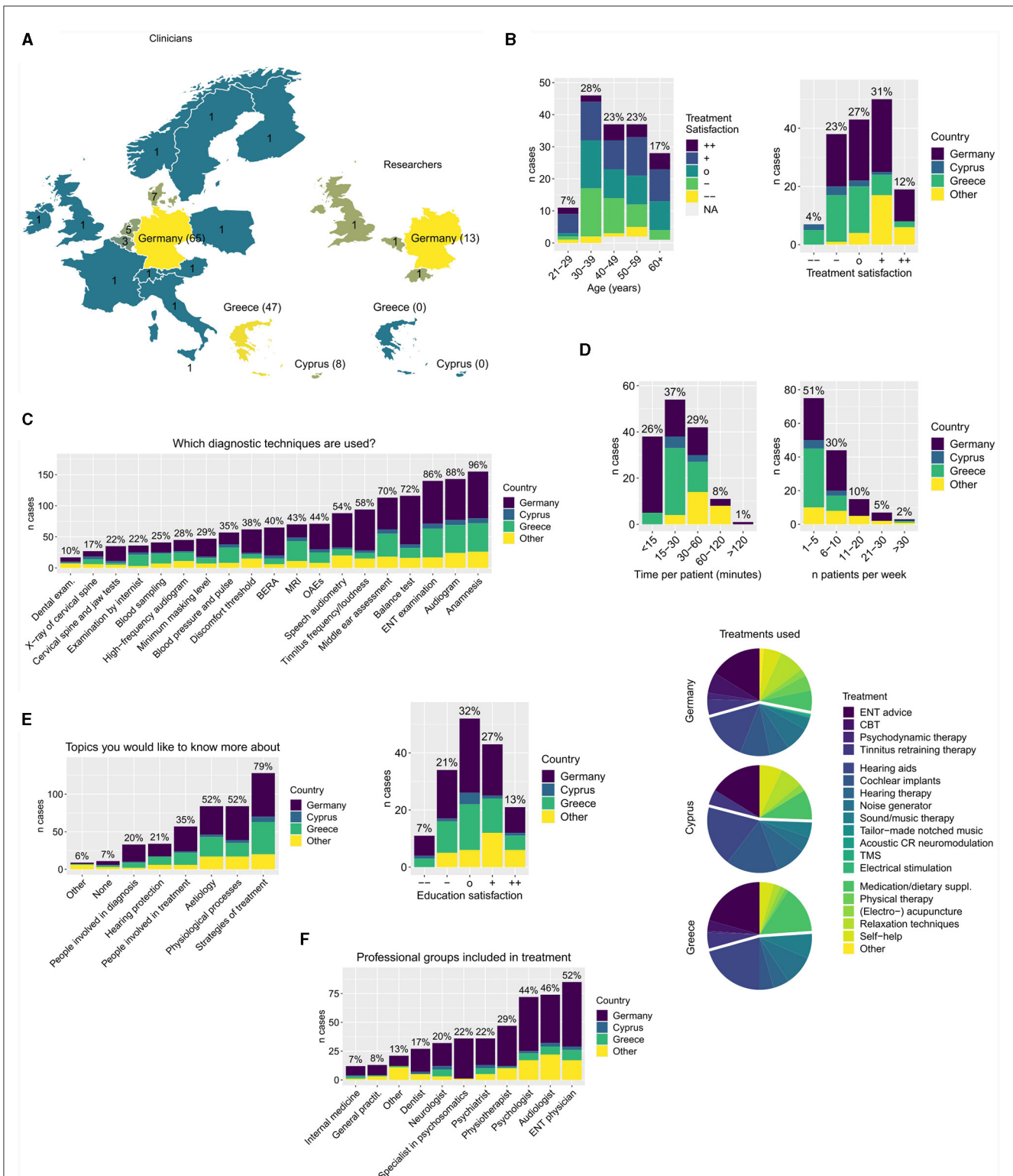


FIGURE 2

Clinician and researcher surveys. **(A)** Counts of patient nationalities, separately for clinicians (left) and researchers (right). **(B)** Age distribution of clinicians and researchers, with colors indicating satisfaction with tinnitus treatment offered in their institution (left). Treatment satisfaction per country (right). **(C)** Overall percentages and counts of diagnostic techniques used per country. **(D)** Time clinicians spend per patient (upper left) and number of patients per week (upper right), and distribution of specific treatments used by clinicians per country (pie charts). Segments comprising hearing-related and neuroscientific treatment techniques are highlighted with thick white lines. **(E)** Counts of tinnitus-related topics the clinicians and researchers would like to know more about (left) and satisfaction with the tinnitus-related education received (right). **(F)** Counts of professional groups included in case of multi-disciplinary tinnitus treatment. OAEs, otoacoustic emissions; BERA, brainstem evoked response audiometry; MRI, magnetic resonance imaging; ENT, ear, nose, and throat; CBT, cognitive behavioral therapy; TMS, transcranial magnetic stimulation.

approach indicated that there was wide range of professional groups included in tinnitus treatment (Figure 2F), those that stated the involvement of specialists in psychosomatics were almost exclusively from Germany (97%, 35/36).

## 4 Discussion

The patient survey has shown that most participants were older than 50 years, consistent with the increasing prevalence with age (Biswas et al., 2022), and had a rather negative opinion about the tinnitus treatment options available to them. The Greek patients represented an outlier in this regard, as they predominantly indicated a neutral treatment option satisfaction. Crucially, the more positive ratings of the Greek patients were not reflected in a higher number of treatments, as the majority of them had not received any tinnitus treatment at all. Moreover, fewer treatment techniques were available in Greece, with the use of medications and dietary supplements being by far the most common treatment. In turn, the German patients did not report a greater treatment option satisfaction although they received a markedly higher number of treatments than the Cypriot and Greek patients (Figure 1D). In particular, the percentage of German patients that received counseling and/or some form psychotherapy [ENT advice, cognitive behavioral therapy (CBT), psychodynamic therapy, or tinnitus retraining therapy] was much larger [81% (93/115), Cyprus: 13% (8/63), Greece: 13% (4/30)]. This finding thus conflicts with the prevailing view that in disorders which include a somatoform component, such as chronic tinnitus (Hiller et al., 1997; Boecking et al., 2021), counseling and the management of the disease are crucial for a high treatment satisfaction (Henningsson et al., 2007; Oyama et al., 2007). In contrast, the repeated use of different diagnosis and treatment techniques, particularly those that involve passive physical measures (Henningsson et al., 2007), is not considered to be beneficial. There is converging evidence that CBT—as used in 36% of the German patients, but only 6% of the Cypriot patients and none of the Greek patients—is an effective therapy for chronic tinnitus (Cima et al., 2014; Landry et al., 2020), while empirical support for the medication-based treatment of chronic tinnitus is lacking (Bauer, 2018; Mazurek et al., 2022). When attempting to interpret these seemingly counterintuitive results, it should be highlighted that no reliable information regarding the treatment effects could be obtained via the present web-based survey. That is, no standardized tinnitus questionnaires such as the TQ (Goebel and Hiller, 1994) were used. Moreover, higher satisfaction ratings must not correspond to a higher effectiveness of the respective treatment forms. Indeed, other factors such as a lower complexity and treatment burden of a therapy are also associated with a greater treatment satisfaction (Barbosa et al., 2012). A possible reason for the divergent results obtained for the Greek patients might be that their tinnitus-related distress levels were lower compared to the other patients. However, 40% of the Greek patients rated their tinnitus as a big or very big problem, compared to 35% overall. On the other hand, previous data obtained from Greek tinnitus patients (Vallianatou et al., 2001) suggested lower levels of depression compared to chronic tinnitus patients from other

western countries. The authors furthermore reported that most Greek tinnitus patients had developed effective coping techniques and went on to discuss the possible positive role of geographical and cultural factors in this context. However, if this explanation was true, it should also apply to the Cypriot patients who showed a lower treatment option satisfaction despite comparably low numbers of received treatments. Another factor that might have contributed to the higher satisfaction ratings of the Greek patients are their expectations toward the healthcare system. In case of low expectations and limited knowledge regarding recommended treatment forms, patients often exhibit a high satisfaction despite a low quality of the healthcare received (Roder-DeWan et al., 2019).

Among the techniques used for diagnosing tinnitus, no country-specific effects were evident, apart from the more frequent use of advanced audiological tests in Germany. Regarding their educational needs, the patients expressed interest in learning more about a variety of topics, especially treatment strategies. Both of these findings were also evident in the clinician and researcher surveys. However, the Greek patients again represented an outlier as they were generally less interested in tinnitus-related education.

The clinician and researcher surveys revealed that they were overall younger than the patients and exhibited a higher treatment satisfaction. The latter result is consistent with survey data of tinnitus patients and clinicians in the US (Husain et al., 2018). The satisfaction with the tinnitus treatment options offered in their institution furthermore increased with age. A possible explanation for the higher satisfaction ratings compared to the patients might be the different expectations regarding the treatment outcomes. Whereas, most tinnitus patients unrealistically expect decreased loudness or complete elimination of their tinnitus, clinicians were found to consider a reduced awareness as well as decreased stress and anxiety symptoms, and greater tinnitus-related knowledge as indicators of treatment success (Husain et al., 2018). Furthermore, treatment satisfaction was higher among the German clinicians although they had less time per patient and saw a greater number of patients per week. This finding is broadly in line with the results of Cima et al. (2020), where healthcare professionals from northern Europe were markedly more satisfied with the tinnitus treatment offered than their colleagues in southern and eastern Europe. The higher treatment satisfaction of clinicians from northern European countries such as Germany may be due to the higher rate of guideline-conform tinnitus treatments involving multi-disciplinary teams including psychologists (Hall et al., 2011; Cima et al., 2019, 2020; Mazurek et al., 2022). There were no marked country-specific effects with respect to the treatment techniques used by the clinicians. However, while a multi-disciplinary approach to the treatment of tinnitus was common in Germany, it was judged to be an exception in Greece. Most clinicians and researchers indicated that they were moderately satisfied with their tinnitus-related education and there were no pronounced country-specific differences, same as for the educational needs. Almost all Greek clinicians and researchers had an ENT or otolaryngology background, as compared to only about two thirds of their German counterparts. In particular, the involvement of specialists in psychosomatics was almost exclusively found in Germany. As the educational needs did not differ between

the Greek and German participants, the current results suggest similar educational needs across professional disciplines.

Concerning the two main goals of the present surveys—(a) The identification of the patients' attitudes and needs with regard to tinnitus-related healthcare and (b) the attitudes, educational needs, and interdisciplinary inconsistencies among clinicians and researchers—it was hence found that: Firstly, the number of tinnitus diagnosis and treatment techniques was unrelated to the treatment satisfaction ratings of the patients, and their treatment satisfaction was overall rather negative. Secondly, both the patients as well as the clinicians and researchers expressed a high interest in learning more about various tinnitus-related topics, and the educational needs appeared to be similar across clinicians from different professional disciplines.

Due to the over-representation of specific participant groups such as those with a greater level of technological sophistication (Kwak and Radler, 2002) and participants with a higher socioeconomic status (Heiervang and Goodman, 2011), web-based surveys are usually not completed by representative samples, unless participants are specifically selected to fulfill this criterion (e.g., Biswas et al., 2022). A further methodological issue of web-based surveys is the low rate of full responses (Heiervang and Goodman, 2011), as evidenced by an exclusion rate of 34% (112/334) of the initial number of patients because of missing data. Hence, we did not focus on clinical aspects of the patients' tinnitus and how they might vary across countries. Instead, the patient survey was intended to reveal differences regarding the tinnitus-related healthcare system across Europe.

Other than for the patient survey, in which there were more than twice as many Cypriot than Greek participants, the number of participating clinicians reflected the size of the three countries of interest. However, the low number of clinicians from Cyprus ( $n = 8$ ) also precluded reliable comparisons with their colleagues from Greece and Germany. Moreover, despite repeated attempts, no researchers from Cyprus and Greece that have done tinnitus-related work could be recruited. The lack of researchers from these two countries is in line with the results from the clinician survey which revealed a less specialized and more medically-oriented tinnitus-related healthcare system in Greece compared to Germany. Specifically, almost all Greek clinicians indicated an ENT or otolaryngology background and few of them confirmed the existence of a multi-disciplinary approach to the treatment of tinnitus. Although the unequal economic and public funding situations in the three considered countries (Eurostat, 2023) might be one reason for the absence of researchers from Cyprus and Greece, it should be noted that both countries have been very successful in acquiring research funding from the EU in recent years (Abbott and Schiermeier, 2019). While the clinician and researcher surveys were largely in line with the patient survey with respect to the diagnostic techniques used, there was a striking difference regarding the tinnitus treatment. Whereas, the proportions of the different treatment techniques were very similar across the clinicians from Cyprus, Greece, and Germany, marked differences were evident across the patients from these countries. In particular, the large proportion of Greek and Cypriot patients that were using medications and dietary supplements suggests that many of them either treated themselves or were treated outside

specialized clinics. While current clinical guidelines (Cima et al., 2019; Mazurek et al., 2022) recommend drug-based treatments only in case of acute tinnitus and to counteract psychiatric comorbidities in chronic tinnitus, the use of dietary supplements is generally discouraged due to insufficient evidence.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by Charité—Universitätsmedizin Berlin, No. EA1/126/22. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

## Author contributions

KS: Data curation, Formal analysis, Visualization, Writing – original draft, Writing – review & editing. TS: Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing, Validation. BB: Methodology, Writing – review & editing, Validation. MA: Conceptualization, Funding acquisition, Writing – review & editing. PB: Conceptualization, Funding acquisition, Writing – review & editing. LB: Methodology, Writing – review & editing. CD: Conceptualization, Funding acquisition, Writing – review & editing. SG: Conceptualization, Funding acquisition, Writing – review & editing. CI: Conceptualization, Funding acquisition, Writing – review & editing. AS: Conceptualization, Funding acquisition, Writing – review & editing. EV: Funding acquisition, Writing – review & editing. EP: Funding acquisition, Project administration, Writing – review & editing. BM: Funding acquisition, Methodology, Writing – review & editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of *Frontiers*, at the time of submission. This had no impact on the peer review process and the final decision.

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