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ORIGINAL ARTICLE

Stress coping strategies, problem avoidance, and social isolation in chronic tinnitus

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ABSTRACT

Objectives: This study aims to identify coping strategies for stress applied in individuals with chronic tinnitus and to examine the relationship between these strategies and social isolation.

Patients and Methods: Between January 2022 and April 2022, a total of 100 participants were enrolled and divided into two groups: the study group (SG) consisting of individuals with tinnitus, and the control group (CG) (25 males, 25 females; 44.50±10.76 years; range: 18 to 59 years) comprising healthy individuals with normal hearing. The SG was further subdivided based on hearing status into SG1, normal hearing (7 males, 6 females; 38.10±14.50 years; range: 18 to 62 years) and SG2, hearing loss (18 males, 19 females; mean age: 47.16±11.87 years; range, 23 to 64 years). Participants were administered the Coping with Stress Scale and the Social Isolation Scale, and comparative analyses were conducted between the two groups.

Results: The findings indicated that the overall coping with stress and problem-focused coping scores of tinnitus patients were significantly lower than those of the CG ($p < 0.05$). However, no significant difference was observed between the two groups regarding social support strategies ($p > 0.05$). Additionally, it was found that the social isolation scores of tinnitus patients were higher, and that social isolation increased among individuals with hearing loss. The results revealed that the average stress coping scores for the study group (76.86±12.12) were markedly lower than those of the control group (82.66±9.30) ($p = 0.009$). Furthermore, problem-focused coping scores were significantly reduced in tinnitus patients (27.28±5.43) when compared to the control group (30.08±4.62) ($p = 0.007$). Nevertheless, no significant differences were noted between the two groups in terms of social support strategies ($p = 0.310$). Moreover, it was observed that the social isolation scores for tinnitus patients were significantly elevated compared to the control group ($p = 0.001$).

Conclusion: These findings emphasize the severity of the psychosocial effects of tinnitus and indicate the need for interventions that will enhance individuals' coping abilities. The study highlights the importance of social support-focused interventions in reducing social isolation among tinnitus patients.

Keywords: Coping with stress, problem avoidance, social isolation, social support, tinnitus.

Tinnitus, a common reason for frequent visits to audiology clinics, is defined as the perception of auditory sensations without an acoustic stimulus. The prevalence of tinnitus ranges from 5.1 to 42.7%, and it generally increases with age.[1] Tinnitus negatively affects life in many ways, particularly in emotional, social, and cognitive domains. Research has shown that it can lead to various psychological issues, such

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as stress-related depression, anxiety, and suicidal thoughts, and that it can result in social withdrawal and isolation depending on the severity of tinnitus.[2-4] Tinnitus and stress are thought to be closely related, as they cause similar changes in neural networks.[3] It is unclear whether various psychological processes, such as stress, are risk factors for tinnitus or the result of tinnitus, but this correlation is often described as a 'vicious cycle'.[5-7] Coping with stress is crucial for breaking this cycle and improving quality of life.[8]

Coping with stress is defined as an individual's continuously changing, adaptive cognitive and behavioral efforts to manage the effects of stress at a manageable level. The importance of coping strategies for stress in patients with tinnitus is directly related to the perceptual burden created by tinnitus. Previous studies have reported that more passive or avoidance-based coping strategies are associated with a higher tinnitus burden.[9,10] Passive, controlling, and avoidance coping strategies are reported to have a significant impact on habituation failure, which can result in chronic tinnitus with a high experienced tinnitus burden.[11] While these strategies may seem effective in the short term, due to the chronic nature of tinnitus, they can lead to a continuous stress response in the long term.[9] Therefore, when considering that coping strategies for tinnitus are closely related to the process of habituation, these insights can guide counseling and treatment strategies for individuals with tinnitus.

For patients with tinnitus, managing stress can be challenging due to distracting sounds, and this may lead them to withdraw socially. Social isolation is defined as a state in which an individual lacks a sense of belonging, social participation, and valued relationships with others and can negatively affect the quality of life of individuals with tinnitus.[12,13] Therefore, our study aimed to identify coping strategies used by individuals with chronic tinnitus and to investigate the relationship between the use of these strategies and social isolation. A better understanding of coping strategies for tinnitus and their impacts on daily life can offer significant opportunities for improving therapeutic strategies.

PATIENTS AND METHODS

This case-control study was conducted at the Institute of Health Sciences, Ankara University, Department of Audiology and Speech Disorders, between January 2022 and April 2022. A total of 100 participants were enrolled and divided into two groups: the study group (SG; n = 50) consisting of individuals with tinnitus, and the control group (CG; n = 50) (25 males, 25 females; 44.50±10.76 years; range: 18 to 59 years) comprising healthy individuals with normal hearing. The SG was further subdivided based on audiological status into two subgroups: SG1 (n = 13) normal hearing, (7 males, 6 females; 38.10±14.50 years; range: 18 to 62 years) and SG2 (n = 37) hearing loss, (18 males, 19 females; mean age: 47.16±11.87 years; range, 23 to 64 years). The inclusion criteria for the SG required participants to be aged between 18 and 65 years, to have experienced tinnitus for at least three months, and to have a Tinnitus Handicap Inventory (THI) score of 38 or higher. Additionally, these participants must have undergone routine audiological evaluations (including pure-tone, speech, and immittance audiometry) within the last six months, with results categorized as normal hearing for study group 1 (SG1) or hearing loss for study group 2 (SG2). Inclusion for the CG required being aged between 18 and 65 years, having no tinnitus complaints, and having documented normal hearing within the last six months. For both groups, volunteering to participate was an essential inclusion requirement. The exclusion criteria for the study involved individuals with a diagnosis of objective tinnitus, those with a THI score of 36 or lower (for the SG), failure to complete all scale information or audiological evaluations, and a lack of voluntary participation. Written informed consent was obtained from each patient. The study protocol was approved by the Ankara University Faculty of Medicine Human Research Ethics Committee (Date: 12.01.2022; Decision No.: İ11-723-21). The study was conducted in accordance with the principles of the Declaration of Helsinki.

The SG and the CG were compared in terms of their scores on the Coping with Stress Scale (CS)[14] and the Social Isolation Scale (SIS).[15]

G*Power version 3.1.0 statistical software (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany) was used to determine the sample size to be included in the study.[16-18] According to this, for the independent samples t-test used to compare CS scores between the two groups, a medium effect size of 0.57, 0.80 power, and 0.05 acceptable type 1 error indicated that at least 50 participants were needed in each group. The study was completed with 100 participants.

Audiological assessments and scales

Audiological assessments and scales were conducted in accordance with the standards of the Industrial Acoustic Company (North Aurora, IL, USA), using the Interacoustics AC40 (Middelfart,

Denmark) clinical audiometer and GSI Tympstar Pro (Grason-Stadler, Eden Prairie, MN, USA) device. These assessments included pure-tone audiometry, speech audiometry, and tympanometric measurements. Hearing status was determined through the integration of these data. During pure-tone audiometry, air conduction (AC) thresholds were evaluated using insert earphones across a frequency range of 125 to 16,000 Hz. Bone conduction thresholds were measured with a bone vibrator at frequencies from 500 to 4000 Hz. Pure tone averages (PTA) were calculated by taking the average of the thresholds at 500, 1000, 2000, and 4000 Hz. In our study, the degree of hearing loss was determined according to the AC PTA using the Goodman classification from 1965.

The THI is used to assess the discomfort caused by tinnitus.[19] Scores between 0-16 indicate level 1, 18-36 indicate level 2, 38-56 indicate level 3, 58-76 indicate level 4, and 78-100 indicate level 5. The higher the score, the greater the impact of tinnitus on life. In our study, participants with level 3 or more severe tinnitus were included. This criterion was set, as it is more likely that these participants are affected by tinnitus in their daily lives.

The CS aims to evaluate individuals' methods of coping with stressful situations.[16] An increase in the CS score indicates that the individual is using coping strategies more effectively. The total score range of the scale varies from 23 to 115. The subscales of the scale represent different aspects of coping strategies. The 'seeking social support' subscale measures individuals' tendencies to seek help from their surroundings during stressful moments; the 'problem-focused approach' subscale assesses direct engagement with stress-inducing situations and the search for solutions; the 'avoidance of dealing with the problem' subscale measures efforts to distance oneself from the source of stress or redirect attention elsewhere. These subscales play an important role in determining which coping strategies individuals tend to adopt.

High scores indicate that the individual prefers a particular method of coping with stress more. For instance, a high score on the social support seeking subscale suggests that the individual is seeking social support when coping with stress; a high score on the problem-focused approach subscale indicates a tendency to confront the issue directly; while a high score on the avoidance subscale indicates a tendency to avoid the source of stress or redirect attention elsewhere.

The SIS is a tool developed to assess individuals' experiences of exclusion from their social environment or deprivation of social relationships.[20] An increase in the score obtained from this scale indicates that the individual has a high level of social isolation and therefore feels deprived of or excluded from social relationships. The scale consists of 14 items, and responses are obtained through Likert-type scoring. The total score range obtainable from the scale varies from 14 to 42.

Statistical analysis

Statistical analysis was performed using the IBM SPSS version 26.0 software (IBM Corp., Armonk, NY, USA). Mean ± standard deviation (SD) were used for numerical variables, and number and percentage values were used for categorical variables. Compliance with normal distribution was evaluated using analytical and visual methods. Pearson correlation test was used to compare scale scores, and an independent sample t-test was used to compare demographic data and tinnitus characteristics with scale scores. An independent sample t-test was used to compare the scale scores between the SG and CG. If the data were not normally distributed, nonparametric equivalents of these tests were used. *P*-values less than 0.05 were considered statistically significant.

RESULTS

The identified strategies were defined as 'seeking social support', 'problem-focused approach', and 'avoidance of the problem'. The findings indicate differences between tinnitus patients and the CG in terms of overall CS and its subscales of seeking social support, problem-focused approach, and avoidance strategies. Analyses of each finding are presented below.

The mean age of SG participants was 44.8±13.1, while the mean age of CG was 32.6±10.7. Descriptive statistics for participants are presented in Table 1. The negative correlation between age and CS score was not statistically significant ($p > 0.05$). The positive correlation between age and SIS score was also not statistically significant ($p > 0.05$). No significant relationship was found between gender and CS or SIS scores ($p > 0.05$).

The obtained findings regarding the overall CS status indicate that the mean score of SG (76.86±12.12) was lower than that of CG (82.66±9.30). The results of the independent samples t-test indicated that this difference was statistically significant,

Table 1. Descriptive statistics for groups

Outcome	Mean±SD
Study group (n = 50)	
Tinnitus with normal hearing (n = 13)	
Age	38.10±14.50
PTA right	9.6±3.8
PTA left	7.53±4.09
Duration of tinnitus (year)	2.73±5.29
Tinnitus with hearing loss (n = 37)	
Age	47.16±11.87
PTA right	36.18±26.14
PTA left	30.83±14.02
Duration of tinnitus (year)	6.99±8.81
Control group (n = 50)	
Age	44.50±10.76
PTA right	9.20±6.32
PTA left	9.14±7.14

SD, standard deviation; PTA, pure tone audiometry average.

t(91.859) = –2.683, p = 0.009 (p < 0.05). This finding reveals that individuals with tinnitus have weaker coping skills compared to the CG.

In terms of the seeking social support strategy, no significant difference was observed between the mean score of SG (24.10±4.57) and that of CG (25.12±5.38). The independent samples t-test results indicated that the difference between the groups was not statistically significant, t(98) = –1.021, p = 0.310 (p > 0.05). This indicates that both groups exhibited similar performance in seeking social support strategies.

The mean score of CG in the problem-focused approach strategy (30.08±4.62) was higher than that of SG (27.28±5.43). The independent samples t-test results indicated that the difference between the groups was significant, t(95.549) = –2.772, p = 0.007 (p < 0.05). This indicates that the CG was more effective in coping with problems.

On the other hand, no significant difference was observed between the groups regarding the avoidance of the problem strategy. The mean score of SG (25.50±6.24) was similar to that of CG (27.54±5.62). The independent samples t-test results indicated that this difference was not statistically significant, t(96.951) = –1.716, p = 0.089 (p > 0.05). This finding suggests that both groups exhibited a similar approach in avoiding the problem. Figure 1 presents the analysis of the CS scale for individuals with tinnitus and the CG.

Among SG participants, 37 had hearing loss (n = 50). When analyzing the CS scores of participants with (HL+) and without (HL–) hearing loss, the mean difference was 25.26 for HL+ and 26.19 for HL–. There was no statistically significant difference between the CS scores of HL+ and HL– participants (z = –0.199, p > 0.05).

When analyzing the scores on the SIS, the mean difference was 59.8 for SG and 41.1 for CG. The analysis found a statistically significant difference between the SIS scores of SG and CG (z = –3.305; p = 0.001). A low-level negative correlation between CS and SIS scores was found to be significant (r = –0.291, p = 0.003). When examining the SIS scores between HL+ (hearing loss) and HL– participants in

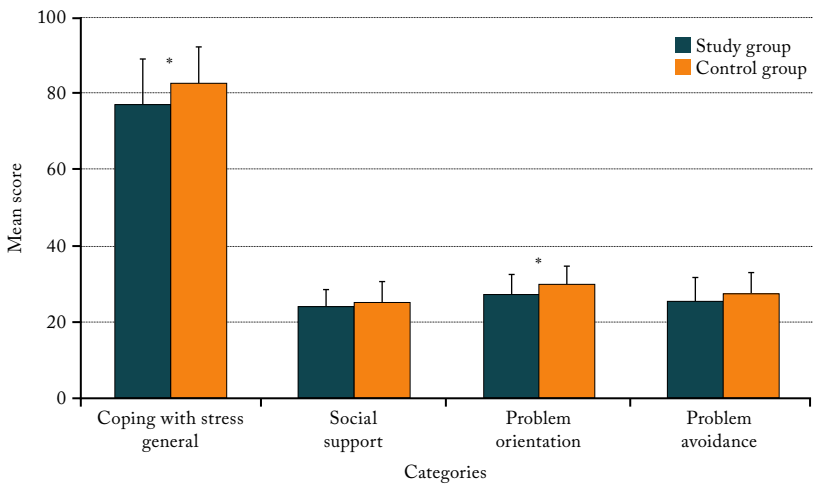

Figure 1. Coping with stress scale analysis of all individuals with tinnitus and the control group.

* p < 0.05.

Table 2. Correlations between variables

Variables	THI	SIS	CS	Social support	Problem orientation	Problem avoidance
THI	1.000	0.061	−0.109	0.238	−0.103	−0.280*
SIS	0.061	1.000	−0.291**	−0.209*	−0.230*	−0.153
CS	−0.109	−0.291**	1.000	0.484**	0.781**	0.735**
Social support	0.238	−0.209*	0.484**	1.000	0.158	−0.009
Problem orientation	−0.103	−0.230*	0.781**	0.158	1.000	0.442**
Problem avoidance	−0.280*	−0.153	0.735**	−0.009	0.442**	1.000

THI, tinnitus handicap inventory; SIS, social isolation scale; CS, coping with stress scale; * $p < 0.05$, ** $p < 0.01$.

SG, the mean difference was 27.99 for HL+ and 18.42 for HL−. A statistically significant difference was found between the SIS scores of participants with and without hearing loss ($z = -2.054$, $p = 0.001$).

When analyzing the THI score, the mean was found to be 63.7±17.9. The negative correlation between THI score and CS was not statistically significant, and the correlation between THI and SIS score was also not significant ($p > 0.05$). A low-level negative correlation was found between THI score and the avoidance subscale of CS ($r = -0.28$, $p = 0.049$). There was no significant correlation between THI score and the social support and problem-focused subscales of CS ($p > 0.05$). Table 2 presents the correlation findings among variables. When examining the duration of tinnitus, the mean was found to be 5.8±8.2 years. The analysis revealed no significant correlation between the duration of tinnitus and THI, CS, and SIS scores ($p > 0.05$).

DISCUSSION

The data obtained from this study help us understand the effects of tinnitus on individuals' coping strategies for stress and levels of social isolation. The research findings reveal that individuals with tinnitus have lower coping abilities for stress compared to controls and are less effective in problem-focused strategies. This highlights the psychosocial impacts of tinnitus on individuals' quality of life and emphasizes the need for targeted interventions to improve coping strategies for stress. Additionally, the higher SIS scores of individuals with tinnitus indicate that these individuals are withdrawing more from social relationships, suggesting that social support systems may be critically important for this group. In this context, the findings obtained are evaluated and discussed in comparison to the existing literature.

Stress is defined as a response or reaction of an organism to environmental challenges. In individuals with tinnitus, it is a constant presence. It is also known as tinnitus etiology, and individuals with tinnitus complaints in clinical settings often report that tinnitus feels 'higher' during stressful periods compared to other tinnitus days. Canlon et al.[21] conducted a study to investigate the relationship between prolonged stress and hearing disorders, demonstrating a systematic relationship between long-term distress symptoms and increased prevalence of hearing loss/tinnitus. As a result, emotional exhaustion was found to be a significant risk factor for tinnitus, and it was concluded that stress measurements should be considered in the evaluation and treatment of problems such as tinnitus. Additionally, in a study conducted by Gomaa et al.[22] 52.8% of participants reported that their tinnitus worsened during stressful times. In fact, it has been shown that individuals with high stress levels are as likely to develop tinnitus as those exposed to occupational noise.[23] Therefore, it is stated that there is a widely accepted relationship between stress and tinnitus. The close relationship between stress and tinnitus underscores the importance of coping skills for stress in individuals with tinnitus.

The findings of our study indicate that individuals with tinnitus have lower overall CS scores compared to the CG. This suggests that the auditory discomfort caused by tinnitus hinders individuals' ability to cope with stress in their daily lives. Furthermore, the presence or absence of hearing loss did not affect coping skills. Meijers et al.[10] reported that individuals with tinnitus exhibit different coping skills and utilize various strategies. Notably, task-oriented coping strategies have been found to be more effective in managing the perceptual burden created by tinnitus, while avoidance or emotional coping strategies may lead to the chronicization of the condition and exacerbate symptoms.

When examining scores for problem-focused coping strategies, it was determined that the tinnitus group performed significantly worse than the controls. This result suggests that individuals with tinnitus exhibit a less effective approach to dealing with problems directly. This finding supports the view, as reported in the literature, that maladaptive coping strategies can amplify the effects of tinnitus.[9,24] From a clinical standpoint, the diminished application of problem-focused coping suggests that individuals with tinnitus may find it challenging to actively participate in therapeutic interventions that necessitate behavioral modifications, such as habituation exercises or sound therapy. Rather than proactively addressing the stressor, these patients may take on a more passive stance, which could result in decreased compliance with treatment regimens. Consequently, it is essential for clinicians to integrate cognitive-behavioral techniques designed to improve patients' problem-solving abilities, thereby promoting their active involvement in the rehabilitation process.

Although no significant difference was found between the groups regarding avoidance coping strategies, the difference approached significance (p = 0.08). This finding indicates that the tendency of individuals with tinnitus to employ this strategy is similar to that of the CG. However, it is a point of discussion in the literature that tinnitus, as a chronic condition, may lead individuals to adopt less adaptive methods for coping with stressful situations in the long term. In particular, while avoidance of problems may provide a short-term solution to the psychological burden imposed by tinnitus, it is suggested that it could increase individuals' stress responses in the long term.[11,25] Therefore, the use of avoidance-focused strategies has the potential to be problematic.

No significant difference was observed between the groups in terms of social support scores. This indicates that both groups performed at similar levels in their strategies for receiving social support. The lack of a significant difference in this strategy suggests that individuals with tinnitus also seek social support when coping with stressful situations. The absence of variation in the pursuit of social support, despite elevated social isolation scores among individuals with tinnitus, presents a compelling paradox. This indicates that although tinnitus sufferers are equally inclined as their healthy counterparts to seek assistance, the 'invisible' characteristic of tinnitus may lead to their needs being inadequately addressed by their social networks. Patients might reach out for support; however, if their family and friends do not comprehend the distress associated with a phantom sound, such interactions may fail to mitigate feelings of isolation. Consequently, while the frequency of support-seeking behavior seems typical, the quality or efficacy of the support received may be lacking.

One study noted that tinnitus support groups enhance social connectivity and that this experience fosters resilience among individuals facing tinnitus problems.[26] Another research highlighted that, despite the unique distress associated with tinnitus, tinnitus patients gain significant benefits from social support.[27] Pryce et al.[26] also added that the inability to access social support in a group setting brings about further issues. Therefore, targeted interventions such as group therapies and the inclusion of family in the therapeutic process may be beneficial in bridging the gap between seeking support and genuinely feeling supported.

In our study, the higher social isolation scores of individuals with tinnitus compared to controls suggest that their pursuit of social support is inadequate in practice, leading individuals to avoid social interactions. This result emphasizes that tinnitus can impose a significant burden on individuals' social lives and aligns with findings in the literature that social isolation increases individuals' difficulties in coping with this condition.[28] Aydemir et al.[29] demonstrated that individuals with tinnitus are prone to social isolation and that their tinnitus negatively impacts their social functioning, which is a subscale of the quality of life questionnaire.

Considering that hearing loss may also affect social isolation in conjunction with tinnitus, the levels of social isolation between tinnitus patients with and without hearing loss were compared. It was found that individuals with hearing loss experienced greater social isolation. Therefore, caution is warranted when associating hearing loss with tinnitus. Since hearing loss-related social isolation can exacerbate existing social withdrawal by accelerating cognitive decline, restricting physical activities, and increasing the risk of psychiatric disorders, it remains a critical factor.[30,31]

In the study by Elarbed et al.,[3] an increase in the level of tinnitus was associated with the emergence of stress-related symptoms. It was concluded that the recurrence of these side effects is related to the level of tinnitus. Another study explained that patients with high THI scores experience higher levels of stress.[32] In our study, the duration of tinnitus and the severity of tinnitus measured by THI did not show a correlation with CS and SIS scores. Although stress is related to tinnitus, coping with stress and social isolation is not linearly affected by this condition.

A low-level negative correlation was found only between the THI score and the avoidance subscore of the CS, supporting the notion that passive and avoidance-focused coping strategies are associated with a higher experienced burden of tinnitus.[10,25]

This research demonstrates that tinnitus negatively impacts individuals' coping abilities with stress and their levels of social isolation, consequently reducing their quality of life. In this context, the importance of stress management and social support-focused approaches for individuals living with tinnitus is highlighted. It is critical to develop strategies that will strengthen the problem-solving abilities of these individuals and reduce social isolation in interventions aimed at mitigating the negative effects of tinnitus on their psychosocial well-being.

There are some limitations to this study that should be considered. First, the relatively small sample size may limit the generalizability of the findings to the broader tinnitus population. Second, due to the cross-sectional nature of the study, it is not possible to determine causal relationships between tinnitus severity, stress coping strategies, and social isolation. Future longitudinal studies and research with larger samples are needed to better understand the directionality of these associations. Additionally, randomized controlled trials investigating the effectiveness of specific stress management and social support-focused interventions would be valuable for establishing evidence-based treatment protocols.

In conclusion, this research highlights that chronic tinnitus is associated with reduced problem-focused coping abilities and increased levels of social isolation. These findings underscore the necessity of a multidisciplinary approach in tinnitus management that extends beyond audiological treatment. It is recommended that intervention programs integrate psychological counseling to enhance problem-solving skills and social support-based rehabilitation approaches to mitigate isolation. Clinicians should consider these psychosocial factors to improve the overall quality of life for individuals with tinnitus. Future strategies should focus on empowering patients with effective coping mechanisms and fostering social connectedness.

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