

Psychological state of patients with sudden deafness and the effect of psychological intervention on recovery

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Abstract

Objective: To determine the effect of personalized psychological interventions on the recovery of patients with sudden deafness.

Methods: Participants were 438 patients with sudden deafness who were randomly allocated to observation and control groups. Patients in the control group received routine nursing care and drug treatment. Patients in the observation group received personalized psychological interventions, routine nursing care and drug treatment. The Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) were used to measure anxiety and depression. The Simple Coping Style Questionnaire (SCSQ) and the Satisfaction With Life Scale (SWLS) were used to evaluate coping styles, attitude toward life and quality of life.

Results: Patients in both groups had similar SAS and SDS scores at the time of admission. After treatment, there was a significant difference in SAS and SDS scores between the observation and control groups, indicating that the observation group had less anxiety and depression. Both groups had increased SCSQ and SWLS scores following treatment, indicating improvements in positive coping and satisfaction with life.

Conclusion: Effective psychological interventions may change negative thoughts, increase response rate and improve quality of life.

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Keywords

Sudden deafness, psychological state, psychological intervention, anxiety, depression, coping style, quality of life

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Introduction

Sudden deafness, also known as idiopathic sudden sensorineural hearing loss, is an unexplained, rapid loss of hearing. People with sudden deafness often experience hearing loss very quickly, typically within 3 days. Some patients also have vertigo, ringing in their ears or both, and some patients recover some or all of their hearing spontaneously.¹ Because the aetiology and pathogenesis of sudden deafness remain unknown, most people with the disorder never identify its cause. Potential causes include viral infections, vascular occlusion, breaks in the labyrinthine membranes, and labyrinthitis within or behind the cochlea.² The substantial pressure and extreme tiredness related to the fast pace of modern life may also be underlying causes.³ Indeed, patients with autonomic disorders are at increased risk of developing sudden deafness.³ In this study, we examined the effects of personalized psychological interventions on the recovery of patients with sudden deafness.

Methods

Patients

Participants were patients with sudden deafness treated in our hospital from October 2016 to October 2019. Written informed consent for research was obtained from each patient, and the study was approved by the Institutional Human Experiment and Ethics Committee of the

Second Affiliated Hospital of Xi'an Jiaotong University. All patients enrolled in this study met the diagnostic criteria for sudden deafness, as defined by the Chinese Society of Otolaryngology-Head and Neck Surgery and the 2015 guidelines of the Chinese Medical Association.⁴ The exclusion criteria were as follows: (1) drug contraindications; (2) severe heart disease, and liver or renal insufficiency; (3) cognitive or mental disorders and an inability to communicate verbally; and (4) disturbance of consciousness. There were no significant differences in severity of hearing loss, sex, age, family/social background, marital status or general health status between patients in the two groups. All patients signed an informed consent form.

Treatment plan

Based on the Chinese Medical Association of Otolaryngology treatment guidelines for sudden deafness,⁴ patients in the control group were given routine vasodilators, nerve nutrients, glucocorticoids and disease-related education after admission. We also closely monitored their mental state before and after medication use, and offered timely symptomatic treatment when patients experienced physical discomfort.

In addition to these treatments, patients in the observation group received personalized psychological interventions to change their negative thoughts and prevent mood swings. The specific intervention is described below. None of the patients in

the two groups were treated with tympanum injection.

First, we showed patients around the ward to familiarize them with the environment and facilities. This reduced the stress caused by moving to a new environment and made the hospital stay more comfortable. The head nurses then inquired about the patient's history, disease course and disease causes to gain better insight into the patient's health status. To relieve anxiety, we also informed patients of the treatment plan, possible adverse drug reactions and desirable treatment outcomes. During treatment, we maintained effective communication with the patient, established excellent physician-patient relationships and improved patient compliance.

Second, patients with sudden hearing loss tend to experience negative emotions, such as anxiety, agitation and irritability, and thus experience severe adverse effects on their life and work. Therefore, we offered patients customized counselling by taking their social background into consideration, listening to their concerns and maintaining effective communication with the patient and their family members. For elderly patients, we focused on efforts to relax their mind and body by encouraging them to participate in appropriate recreational activities to reduce external pressures, which are usually caused by the economic burden of the disease. For middle-aged patients, we prioritized improving their adherence to treatment to promote recovery and a speedy return to society. For young patients, we motivated them to change any unhealthy living habits and increased their compliance by sharing successful (anonymized) case histories with them. For patients with severe hearing loss, we gained their trust and increased their confidence in treatment by effectively communicating with them using gestures or written words.

Third, we encouraged patients to participate in activities they enjoyed, such as listening to music and practising Taiji, to relieve negative emotions. For patients with concurrent tinnitus, we performed tinnitus-retraining therapy.

Fourth, we used the power of examples and suggestions. We encouraged patients to believe that the disease could be cured through treatment, and that tinnitus and hearing loss would never be an obstacle to their normal life, by introducing patients who had completely recovered and offering positive disease-related information.

Finally, we made sure that patients slept well by placing them in a quiet environment away from any noise disturbance. For patients who had difficulty sleeping, we used oral medications to improve their sleep. We also offered emotional support to patients, encouraged them to have more contact with their relatives and friends and made them feel loved and wanted by people around them to boost their confidence in conquering the disease and to promote early recovery.

Outcome measures

Self-Rating Anxiety Scale (SAS). This self-administered test has 20 questions.⁵ Each question is scored on a Likert scale of 1 to 4 (none or a little of the time, some of the time, a good part of the time, and most of the time, respectively). Higher scores correspond to higher anxiety levels.

Self-Rating Depression Scale (SDS). There are 20 items on this scale.⁶ Each item is scored on a Likert scale ranging from 1 to 4 (a little of the time, some of the time, a good part of the time, and most of the time, respectively). A score ≥ 50 indicates depression, and higher scores represent more severe depression.

Simple Coping Style Questionnaire (SCSQ). The self-rating SCSQ consists of 20 questions that assess coping styles across two dimensions: positive coping (12 items) and negative coping (8 items).⁷ A 4-level scoring system was used: 0 = no use, 1 = occasional use, 2 = sometimes use, and 3 = frequent use. A higher total score reflects a strong positive attitude to coping with pressure.

Satisfaction With Life Scale (SWLS). The SWLS is a 5-item instrument designed to measure global cognitive judgments of an individual's satisfaction with life.⁸ The respondent indicates how much they agree or disagree with each of five items using a 7-point scale ranging from 7 (strongly agree) to 1 (strongly disagree). The possible score range is 5 to 35. Higher overall scores are associated with greater satisfaction with life.

Treatment outcomes

Treatment outcomes after 2 weeks of treatment were divided into four categories (complete recovery, partial recovery, slight recovery and no recovery) according to the Chinese Medical Association of Otolaryngology criteria.⁹ Complete recovery: frequency threshold (at 0.25- to 4.00-kHz frequencies) recovery to normal, or recovery to the same hearing level of the contralateral ear. Partial recovery: hearing gain average ≥ 30 dB at the same frequencies. Slight recovery: hearing gain average between 15 dB and 30 dB at the same frequencies. No recovery: hearing gain average < 15 dB at the same frequencies. The overall rate of effective treatment = the number of patients who were cured, who had effective treatment and for whom treatment effect was marked/total number of patients *100%.

Statistical methods

IBM SPSS Statistics for Windows, Version 19.0 (IBM Corp., Armonk, NY, USA) was used to analyse the data. Measurement data are expressed as the mean \pm standard deviation ($\bar{x} \pm s$) and compared using the t-test. The χ^2 test was used to compare enumeration data. $P < 0.05$ indicated that the difference was statistically significant.

Results

Patient characteristics

A total of 438 patients with sudden deafness were included in this study. Of these, 228 were men and 210 were women; the age range was from 15 to 68 years. The patients were randomly divided into two groups: an observation group (118 men and 110 women; age range, 20 to 68 years; mean age, 44.2 ± 16.89 years) and a control group (110 men and 100 women; age range, 21 to 69 years; mean age, 43.95 ± 13.67 years). In the observation group, there were 207 patients with unilateral hearing loss and 21 patients with bilateral hearing loss. The audiogram pattern was ascending in 49 (21.5%), descending in 72 (31.6%), flat in 44 (19.3%) and profound in 63 (27.6%), according to the guideline published by the Chinese Medical Association of Otolaryngology.¹ Of these patients, 165 also had tinnitus and 38 had vertigo. In the control group, there were 194 patients with unilateral hearing loss and 16 patients with bilateral hearing loss. The audiogram pattern was ascending in 43 (20.5%), descending in 67 (31.9%), flat in 41 (19.5%) and profound in 59 (28.1%), according to the Medical Association of Otolaryngology guideline. Of these patients, 157 had tinnitus and 34 had vertigo. Figure 1 shows the outline of the study design.

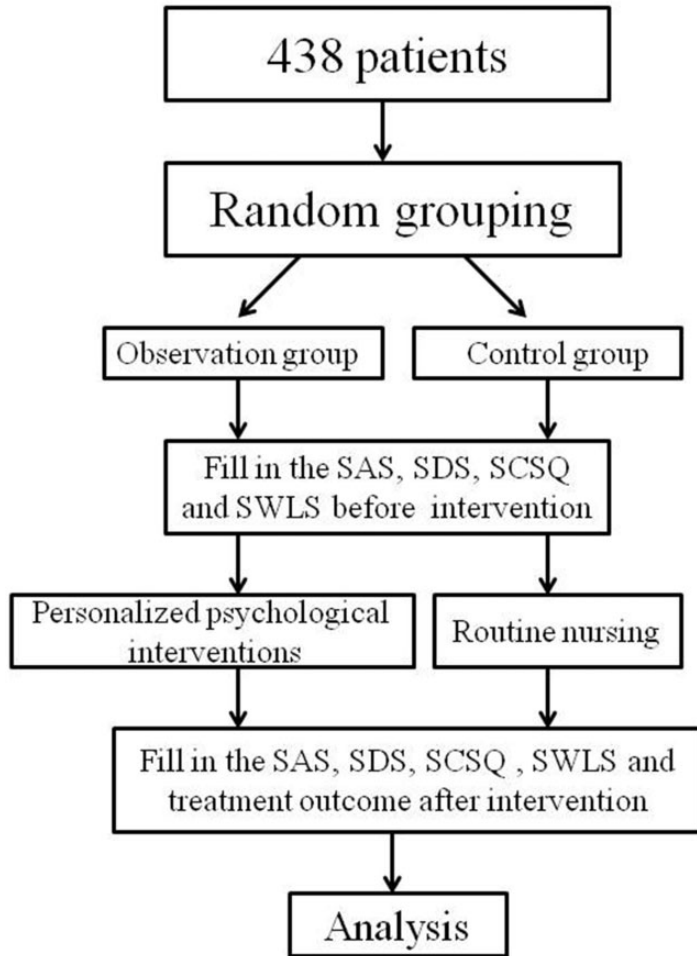


Figure 1. Outline of the study design.

SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale; SCSQ, Simple Coping Style Questionnaire; SWLS, Satisfaction With Life Scale.

Between-group comparison of SAS and SDS scores

There were no statistically significant differences in SAS and SDS scores between the two groups at the time of admission. After treatment, the control group had higher SAS and SDS scores (41.10 ± 3.68 and 51.65 ± 5.34 , respectively) than the observation group (30.50 ± 5.28 and 39.75 ± 5.20 , respectively) (both $P < 0.05$). The SAD and SDS scores decreased in both

groups after treatment (all $P < 0.05$; Table 1).

Between-group comparison of SCSQ scores

After treatment, scores for positive coping increased in both groups (both $P < 0.05$) and the increase was more significant for patients in the observation group ($P < 0.05$; Table 2).

Table 1. Comparison of SAS and SDS scores between the two groups.

Group	SAS		SDS	
	At admission	At discharge	At admission	At discharge
Observation (n = 228), mean ± SD	52.49 ± 1.48	30.50 ± 5.28*	60.25 ± 6.04	39.75 ± 5.20*
Control (n = 210), mean ± SD	51.35 ± 1.42	41.10 ± 3.68*	61.90 ± 5.15	51.65 ± 5.34*
t	0.513	7.357	0.929	7.158
P	0.611	<0.001	0.359	3<0.001

Note: Comparison within groups after treatment, *P < 0.05.

SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale; SD, standard deviation.

Table 2. Comparison of SCSQ scores between the two groups.

Group	Positive coping		Negative coping	
	Before treatment	After treatment	Before treatment	After treatment
Control (n = 210), mean ± SD	1.14 ± 0.23	1.31 ± 0.32*	1.80 ± 0.29	1.69 ± 0.25*
Observation (n = 228), mean ± SD	1.09 ± 0.19	1.71 ± 0.35 ^Δ	1.84 ± 0.20	1.36 ± 0.30 ^Δ
t	0.471	2.393	0.384	2.334
P	0.645	0.031	0.708	0.035

Note: Comparison within groups after treatment, ^ΔP < 0.05, *P < 0.05.

SCSQ, Simple Coping Style Questionnaire; SD, standard deviation.

Table 3. Comparison of SWLS scores between the two groups.

Group	SWLS scores	
	Before treatment	After treatment
Control (n = 210), mean ± SD	21.41 ± 3.58	23.60 ± 3.80*
Observation (n = 228), mean ± SD	20.51 ± 5.14	28.86 ± 3.36 ^Δ
t	0.404	2.927
P	0.693	0.011

Note: Comparison within groups before treatment, ^ΔP < 0.05, *P < 0.05.

SWLS, Satisfaction With Life Scale; SD, standard deviation.

Between-group comparison of SWLS scores

After treatment, patients in both groups had higher SWLS scores (both P < 0.05) and the increase was more apparent for patients in the observation group (P < 0.05; Table 3).

Between-group comparison of treatment outcomes

Patients in the observation group had a significantly higher overall rate of effective treatment than those in the control group (85.08% vs. 74.30%, P < 0.05; Table 4).

Table 4. Comparison of treatment outcomes between the two groups.

Group	Cured	Marked effect	Effective	Ineffective	Overall rate of effective treatment
Control (n = 210), n	68	50	38	54	74.30%
Observation (n = 228), n	86	57	51	34	85.08%

Discussion

Sudden deafness is a common otolaryngologic emergency. Hearing loss usually occurs in minutes, hours or over a few days. Although this condition rarely endangers life, the sudden onset and rapid progression increases patient risk for negative emotions, such as anxiety and panic, and thus severely affects patients' life and work. The aetiology of sudden deafness has not been established; however, proposed causal theories include microcirculation disorders in the ear, viral infections and metabolic disorders.² There is no consensus among clinicians regarding treatment of sudden deafness. Owing to partial or complete loss of hearing, and the resulting communication difficulties, some patients can feel nervous, anxious and irritable. As a result, they may show poor compliance and even decline treatment, on the assumption that treatment is futile and that their hearing will not recover. Some patients are also prone to panic episodes, feelings of insecurity, depression and psychological trauma because of hearing difficulties and concomitant problems such as tinnitus and vertigo.

If these negative emotions are not resolved in a timely manner, patients will develop a pessimistic attitude toward life, and even deliberately self-harm or commit suicide. Emotional swings increase the body's emergency responses and negatively affect neurohumoural regulation, which further leads to microcirculation disorders (e.g. insufficient blood supply to the inner

ear and metabolic disorders), thus aggravating the patient's condition and resulting in poor prognosis.¹⁰ However, psychological intervention can reduce negative thoughts, provide a channel for the release of irritability and nervousness, and induce a state of body and mind relaxation. Effective psychological intervention can in turn improve inner ear microcirculation, increase immunity and therefore promote hearing recovery.¹¹

We found that patients who received psychological interventions had a significantly higher total rate of effective treatment than patients in the control group, indicating the efficacy of personalized psychological intervention. Psychological interventions are actions performed to address the psychological aspects of an individual, bring about mood changes and increase positive feelings. Personalized psychological interventions are different therapeutic techniques tailored to a particular person, and mainly include psychological support, cognitive intervention and relaxation techniques. One study on stress intervention in patients with sudden deafness found that the depressive stress response is a strong predictor of response to treatment.¹² Positive psychological interventions enhance a patient's coping skills, build their resilience and focus on improving well-being through positive thoughts and emotions. These interventions help patients by making them forget their pain, guiding them through the treatment process by building up their confidence in recovery, and facilitating self-acceptance by

encouraging them to love themselves unconditionally to induce changes in behaviour, thoughts and feelings.^{13,14}

In this study, patients in the observation group received a personalized psychological intervention in addition to routine guidance, health education and drug treatment. We maintained effective communication with patients, helped them manage stress and avoid possible stressors, and changed their ways of thinking through systematic and comprehensive intervention activities. We instilled a positive attitude in patients by strongly suggesting that their disease could be cured with effective treatment and that treatment compliance was important for full recovery. We made a concerted effort to provide an outlet for negative emotions, such as anxiety, nervousness and agitation, to facilitate the adoption of positive coping styles, increase confidence in treatment and reinforce happiness and positivity. We also encouraged patients to accept the reality of their disease, to embrace themselves for who they are and to seek emotional support from friends and relatives. We found that following the psychological intervention, patients in the observation group experienced significant relief from anxiety and nervousness, began to actively and optimistically cope with their lives and became more confident in their future life and work. Evaluation of the patients' mental states showed that there were no significant differences in anxiety and depression levels between patients in the two groups at the time of admission. With treatment, SAS and SDS scores significantly decreased for patients in both groups, indicating less anxiety and depression. Patients in the observation group had significantly lower SAS and SDS scores than those in the control group. These results show that personalized psychological interventions for patients with sudden deafness can change negative emotions, as

well as improve lifestyle, quality of life and satisfaction with life.

Conclusion

For patients with sudden deafness, the implementation of targeted, meticulous and systematic psychological interventions may alleviate negative emotions; reduce physical and mental pain; improve psychological state and attitude toward life; help patients adopt a healthy lifestyle and enhance self-satisfaction, quality of life and a return to society.

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Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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