Journal of Fundamentals of Mental Health

Mashhad University of Medical Sciences

Psychiatry and Behavioral Sciences Research Center

Original Article **Open Access**

Misophonia and psychiatric comorbidities in patients referred to psychiatric clinic

***Mehran Zarghami[1,2]; Fereshteh Aghabarari[1]; Ensiyeh Babaei[3]; Abbas Alipour[4]**

[1]*Psychiatry and Behavioral Sciences Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, Iran.*
[2]*Department of Psychiatry, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran.*
[3]*Payam-e- Nour University, Tehran, Iran.*
[4]*Department of Community Medicine, Mazandaran University of Medical Sciences, Sari, Iran.*

Abstract

Introduction: Misophonia is a type of neurophysiological-behavioral phenomenon characterized by increased stimulation of the autonomic nervous system. The affected people experience emotional distress in response to sounds with specific patterns. This study investigates the frequency of misophonia and its related factors in the patients with a history of hospitalization due to psychiatric disorders.

Materials and Methods: This randomized descriptive study was performed on 291 patients, using a demographic and psychiatric history checklist and Misophonia Questionnaire (MQ). The descriptive and regression analysis statistical methods were employed to analyze the data.

Results: The MQ was completed for 213 patients including 41.3% men and 58.7% women. Nineteen% of the patients had hatred of some sounds out of whom 9% were diagnosed with Misophonia Syndrome (MS) and 10% suffered from SubSyndromal Misophonia (SSM). Among the misophonic patients, the most common annoying sound was others' eating sound (36.8%) and in 53% of them, the reaction to the aversive sound was anger. There was a significant relationship between suffering from MS and marital status (P= 0.004), the type of psychiatric disorder (P< 0.001) and personality disorder (P< 0.001), as well as between SSM and gender (P= 0.02), education (P= 0.04), marital status (P= 0.001) and the type of psychiatric disorder (P< 0.001).

Conclusion: The prevalence of MS and SSM in patients with severe psychiatric disorders is noteworthy. Due to the distressing effect of misophonia on patients, it is necessary to pay attention to it in the diagnostic examination and treatment.

Keywords: Misophonia, Misophonia questionnaire, Psychiatric disorders

Please cite this paper as:
Zarghami M, Aghabarari F, Babaei E, Alipour A. Misophonia and psychiatric comorbidities in patients referred to psychiatric clinic. Journal of Fundamentals of Mental Health 2026 May-Jun; 28(3): 161-168.
DOI: 10.22038/jfmh.2025.87673.3317

***Corresponding Author:**
Psychiatry and Behavioral Sciences Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, Iran.
mehran.zarghami@gmail.com
Received: Oct. 02, 2025
Accepted: Dec. 08, 2025
Copyright©2026 Mashhad University of Medical Sciences. This work is licensed under a Creative Commons Attribution-Noncommercial 4.0 International License https:// creativecommons. org/licenses/ by-nc/4.0/ deed.en

Introduction

Sound aversion (misophonia) is a type of a neurophysiological-behavioral syndrome typically characterized by heightened autonomic nervous system arousal and negative emotional reactions due to the person's decreased tolerance for specific sounds (1,2).

In fact, misophonia doesn't mean being aversive to all sounds, rather it's related to a series of certain sounds which are often repetitive in nature and are produced by another person or source (2,3). It seems that those suffering from sound aversion come up with increased arousal of sympathetic nervous system. Such sounds include the sound of the clock, pen clicking, keyboard tapping, finger tapping, other people's snoring, coughing, breathing, throat clearing, chewing, crushing, slurping, lip rubbing, lip smacking, and foot shuffling (3-6). Under such circumstances, the reactions encompass anger, irritability, isolation, disgust, avoidance, frustration, palpitations, sweating, suffering, and diminished social functioning. Also such reactions can lead to the outburst of anger (from irritability to rage) to the sound producing source, and even the intention to harm others. Most of such reactions are so powerful that can influence the individual's lifestyle, occupational choices, social status and interpersonal relationships, and provoke behavioral disturbances (7-9).

Hypersensitivity to sound stimuli is a symptom broadly observed in neurological, auditory, psychiatric and medical disorders like tinnitus, hyperacusis (1) migraine headaches (10,11), Autism Spectrum Disorder (ASD) (12), Post-Traumatic Stress Disorder (PTSD), Borderline Personality Disorder (BPD) (13), bipolar disorder and schizophrenia (14). The exact relationship between misophonia and these disorders is a mystery yet. However, sound aversion does not seem to be a phenomenon co-occurring uniquely and specifically with any one of these disorders. Although empirically speaking, it has not been formally viewed as a specific type of neurological, auditory, cognitive, or psychiatric disorder (6). So, some rigorous studies are required to be conducted to see whether misophonia is a symptom, or a syndrome occurring across other disorders (15).

Considering the existing drawbacks, it seems that most of the misophonic patients are neglected, are not diagnosed or are misdiagnosed, and thus, suffer longer due to their dysfunctions. According to the above statements, the aim of this study was to investigate the frequency of misophonia and its association with psychiatric disorders in a group of outpatients who had a history of hospitalization.

Materials and Methods

In this descriptive study, the clients referring to the psychiatric clinic of Zare Hospital in Sari-Iran have been investigated in terms of the frequency of misophonia and psychiatric disorders. The inclusion criteria covered the clients over 18 years old referring to the clinic from April 2020 to February 2021, with hospitalization history in Zare Hospital in recent years (2019 and 2020). The exclusion criteria included the patients with severe cognitive impairments, intellectual disability and dementia, and the ones whose severe tension made answering the questions unreliable, and lack of potential to communicate verbally. With an approximate estimate of the prevalence of noise aversion in the same population equal to 17% and taking into account confidence limits of 95% and an accuracy of 0.05%, the sample size of 220 people was calculated. However, due to a non-response rate of approximately 35%, the final number of patients considered was 290. 291 patients who were randomly selected from the list of those referring to the clinic entered the study. The required explanations about the objectives of the study were supplied and after acquiring their informed oral consent, the interviews were conducted and the questionnaires were filled out.

Moreover, about substance abuse and diagnosing the psychiatric disorders, the patients' hospital and clinic records were also studied.

Research instrument

A) The Misophonia Questionnaire (MQ): The MQ was designed by Wu et al. in which the symptoms of sound aversion and the resulting emotions and behaviors and the overall intensity of sound sensitivities are measured. The questionnaire is made up of two subscales (sound-aversion-symptom subscale and sound-aversion induced emotions and behaviors subscale). The total score of the questionnaire ranges from 0 to 68 and its cut-off point is set as 7. This manner that the individuals gaining

score 7 or a higher score is considered as those suffering from Misophonia Syndrome (MS) (9). Besides, the convergent validity of the Persian version has been calculated through correlation between the sound-aversion-symptom score and the subscales of sound-aversion induced emotions as r=0.87, $P< 0.01$ and r= 0.94, $P< 0.01$ respectively; indicating the MQ's convergent validity (16).

Qualitative variables were reported with frequency and percentage and quantitative variables with mean ± standard deviation. Chi-square test and Fisher's Exact Test were used to compare qualitative variables in two groups of the study. To analyze quantitative variables, t-test was used. All statistical analyses were performed using SSPS software version 22 (Chicago, USA) and differences with a value of $P< 0.05$ were considered to be significant. Forty-five patients not cooperating to answer the questionnaire were excluded. Besides, 33 cases were removed because of having the exclusion criteria.

Results

The MQ was completed for 213 patients including 88 men (41.3%) and 125 women (58.7%) with the mean age of 38.98 ± 11.22 years. 40 patients (18.77%), consisting of men (62.5%) and women (37.5%), were suffering from sound aversion, out of whom 19 patients (8.92%) (11 men (57.8%) and 8 women (42.1%)) got the score 7 and higher and viewed as suffering from MS. In addition, 21 individuals (9.86%) made up of men (66.6%) and women (33.3%) got the score, who were regarded as having misophonia as a symptom or SubSyndromal Misophonia (SSM). Demographic characteristics and psychiatric diagnoses of patients suffering from MS and SSM are shown in Tables 1 and 2. Among 213 individuals completing the questionnaire, the highest rate of psychiatric disorders were schizophrenia (20%) and bipolar disorder (15%). The highest frequency of MS sufferers (52.63%) had Major Depressive Disorder (MDD) ($P\leq 0.001$) (45.45% males and 62.50% females). Among the patients with MS, personality disorder diagnosis was seen in 31.57% of the cases. Most of the MS sufferers had Anti-Social Personality Disorder (ASPD) (27.27%) and Histrionic Personality Disorder (HPD) (37.5%), respectively ($P< 0.001$). In the patients with SSM, 42.85% had MDD, and 14.28% had personality disorder; most of whom had BPD (22.5%). There was a significant relationship between MS and marital status, the type of psychiatric disorder and personality disorder ($P< 0.05$). A significant statistical relationship was found between SSM and gender, education, marital status and the type of psychiatric disorder ($P<0.05$). Moreover, the highest frequency of the individuals with SSM was seen in the Generalized Anxiety Disorder (GAD) and MDD patients, respectively ($P< 0.001$). Higher scores of MQ were reported in the individuals with the co-occurring personality disorders, (mean score of 11.66) in MS.

In 53% of the patients with MS (in 73% of men and in 25% of women), the reaction to the aversive sound was anger. In other individuals of this group, the reaction to aversive sound was leaving the setting (16%), irritation (16%) and anxiety (5%). The aversive sound in 36.8% of the cases with MS was others' eating sound. Repetitive knocking sound, scraping of the objects, and the sounds coming from the surrounding environment, each was called aversive in 21.05% of the patients. The women suffering from MS were more sensitive to others' eating sounds (37.5%) and repeated tapping (37.5%) and the men suffering from MS were more sensitive to others' eating sounds (36. 36%). In the individuals with SSM, others' eating sounds was the most observed pattern of sound aversion (52.38%).

Table 1. Characteristics of patients with misophonia syndrome

Variable		Misophonia syndrome		Total (N=213)	P
		Yes (N=19)	No (N=194)		
Age (yrs.), Mean (S.D)		42.53 (9.52)	39.73 (11.27)	39.98 (11.22)	0.3
Gender	Female	11 (12.5)	77 (87.5)	88 (41.31)	0.15
	Male	8 (6.4)	117 (93.6)	125 (58.69)	
	Low (illiterate and primary)	5 (6.09)	77 (93.90)	82 (38.5)	
	Intermediate (secondary and high school)	10 (14.28)	60 (85.71)	70 (32.86)	

Education, N (%)	High (High school diploma, and higher)	4 (6.55)	57 (93.44)	61 (28.64)	0.16
	unoccupied	11 (10.37)	95 (89.62)	106 (49.77)	
Job, N (%)	Having a job and housewife	8 (7.47)	99 (92.52)	107 (50.23)	0.48
	Married	13 (17.80)	60 (82.19)	73 (34.27)	
Marital status, N (%)	Single	4 (3.77)	102 (96.22)	106 (49.77)	0.004
	Widow /divorced	2 (5.88)	32 (94.11)	34 (15.96)	
Smoking, N (%)	Yes	4 (10.52)	34 (89.47)	38 (17.84)	0.75
	No	15 (8.57)	160 (91.43)	175 (82.16)	
Substance abuse/dependence, N (%)	Yes	5 (18.51)	22 (81.48)	27 (12.67)	0.07
	No	14 (7.53)	172 (92.47)	186 (87.32)	
Psychiatric disorder, N (%)	MDD*	10 (58.82)	7 (41.17)	17 (7.98)	< 0.001
	GAD**	1 (50)	1 (50)	2 (0.94)	
	OCD***	2 (66.66)	1 (33.33)	3 (1.41)	
	Other	6 (3.14)	185 (96.85)	191 (89.67)	
Personality disorder, N (%)	ASPD****	3 (37.5)	5 (62.5)	8 (3.76)	< 0.001
	HPD*****	3 (100)	0 (0.0)	3 (1.41)	
	Other	0 (0.0)	12 (100)	12 (5.63)	
	No personality disorder	13 (6.84)	177 (93.16)	190 (89.2)	

*Major Depressive Disorder, **Generalized Anxiety Disorder, ***Obsessive Compulsive Disorder, ****Antisocial Personality Disorder, *****Histrionic Personality Disorder

Table 2. Characteristics of patients with subsyndromal misophonia

Variable		Subsyndromal Misophonia		Total (N=213)	P
		Yes (N=21)	No (N=192)		
Age (yrs.), Mean (SD)		41.05 (5.19)	39.86 (10.17)	39.98 (11.2)	0.6
Gender	Female	14 (15.91)	74 (84.09)	88 (41.31)	0.02
	Male	7 (5.6)	118 (94.4)	125 (58.69)	
Education, N (%)	Low (illiterate and primary)	6 (7.31)	76 (92.68)	82 (38.5)	0.04
	Intermediate (secondary and high school)	12 (17.14)	58 (82.58)	70 (32.9)	
	High (high school diploma, and higher)	3 (4.91)	58 (95.08)	61 (28.6)	
Job, N (%)	Unoccupied	10 (9.43)	96 (90.56)	106(49.77)	0.99
	Having a job and housewife	11 (10.28)	96 (89.71)	107(50.23)	
Marital status, N (%)	Married	15 (20.54)	58 (79.45)	73 (34.27)	0.001
	Single	4 (3.77)	102(96.22)	106 (49.77)	
	Widow/Divorced	2 (5.88)	32 (94.11)	34 (15.96)	
Smoking, N (%)	Yes	5 (13.15)	33 (89.84)	38 (17.84)	0.55
	No	16 (9.14)	159 (90.86)	175 (82.16)	
Substance abuse/dependence, N (%)	Yes	3 (11.11)	24 (81.48)	27 (12.67)	0.74
	No	18 (9.68)	168 (90.32)	186 (87.32)	
Psychiatric disorder, N (%)	MDD*	9 (52.94)	8 (47.05)	17 (7.98)	< 0.001
	GAD**	3 (100)	0 (0.0)	3 (1.41)	
	OCD***	0 (0.0)	0 (0.0)	3 (1.41)	
	Other	9 (4.73)	181 (95.26)	190(89.20)	
Personality disorder, N (%)	ASPD****	1 (12.5)	7 (87.5)	8(3.76)	0.79
	HPD*****	0 (0.0)	3 (100)	3 (1.41)	
	Other	2 (16.66)	10 (83.33)	12 (5.63)	
	No personality disorder	18 (9.47)	172 (90.53)	190 (89.2)	

*Major Depressive Disorder, **Generalized Anxiety Disorder, ***Obsessive Compulsive Disorder, ****Antisocial Personality Disorder, *****Histrionic Personality Disorder

Discussion

According to the findings of this study, 19% of the patients with a history of hospitalization due to psychiatric disorders had hatred of some sounds, out of whom, 9% had MS and 10% had SSM. 47% of people with sound aversion have MS considering this point that sound aversion can result in the outbreak of physical and emotional reactions and also exacerbate the behavioral impairments in many patients (7,9,17), around one fifth of the psychiatric patients being engaged in sound aversion is a noticeable figure.

The current study was done in a referral hospital and a large number of the patients suffered from severe disorders such as schizophrenia and bipolar disorder. However, none of the patients was diagnosed with schizophrenia in the MS group nor in the misophonia subsyndromal group, and only one patient with bipolar disorder had MS, which is of course consistent with other studies (17-22). However, the absence of misophonia among them may be due to lack of validity and reliability of MQ in this group of patients.

According to MQ, in the study by Jager et al., the diagnosis of misophonia was confirmed in 74% of the subjects with suspected misophonia. These differences show that not all people who hate some sounds necessarily suffer from MS. That is why we call them sub-syndromal misophonia (22). The studies on the individuals who self-report misophonia or on those referring to the misophonia service providing centers reduce the potential to generalize the study findings (17,22). The number of the women participating in this study was more than men, which can be justified considering the number of the women who go to the clinic for treatment and follow-up. Although the prevalence of misophonia and its demographic distribution have not been precisely defined so far; in most studies, this phenomenon has been reported more in women, which may be due to selection bias (9,18-20).

The highest frequency of MS has been observed among the sufferers of HPD and then ASPD. In the present research, the association between MS and other demographic and some other variables (age, gender, education, job, smoking and substance abuse) was not statistically significant. In the studies done by Wu and Quek et al., gender and age did not have significant association with misophonia symptoms, either (9,17).

According to the present research findings, the score of sound aversion in the patients with personality disorder comorbid with psychiatric disorder was higher and it was lower in those diagnosed with depressive disorder. This has not been mentioned in other studies that have examined misophonia in psychiatric disorders (17,22).

The most common psychiatric disorder in those who had hatred of some sounds was MDD. Similar results were also reported by Jager et al. (22). In 36.8% of the patients with misophonia and in 52.4% of the ones with SSM, others' eating sound was reported as aversive sound. In other studies, mouth sounds were the most common aversive sound, too (7,9,22). In 53% of the patients with MS, the triggered reaction to sound aversion was anger. This reaction was also reported in 83% of both smoking and substance abusing patients with this syndrome. These cases have not been investigated in other studies.

We did not investigate the issue of leaving a job due to misophonia, but half of the participants were unoccupied, the issue which can be expected with respect to their underlying disorders and the secondary dysfunction to the disorder. The impact on working life stayed restricted with just 5% on sick leave in Jager et al.'s study cases who were referral subjects with suspected misophonia (22).

Schröder et al. reported misophonia symptoms comorbidity with OCD, and proposed to categorize misophonia in DSM-5 in the obsessive-compulsive and related disorders class. Considering the small sample size (45 patients), they recommended to conduct more studies in this regard (21). In 2014, Wu et al. reported that only 20% of 483 students with self-reporting misophonia had vivid symptoms of misophonia after completing the MQ. This means that sometimes there is a difference between what people perceive as hatred of certain sounds and the obvious symptoms of MS (9). In comparison, 19% of our patients had sound aversion, out of whom, regarding the MQ, 47% were diagnosed with MS and 53% suffered from SSM. Dozier and Morrison studied 27 individuals of general population self-reporting misophonia, out of whom 92.3% displayed their reaction to sound as anger and anxiety, 53.8% reacted by leaving the site and 46.2% reacted by disgust (19). In the current study, the reaction of 53% of the patients with MS was anger.

In an online research done by Rouw and Erfanian on 300 individuals of the general population with self-reporting misophonia, 50% of them had no comorbidity and the other 50% had some comorbidities, of which PTSD was associated with severity of misophonia (18). Some other studies recommend a relationship between misophonia and PTSD too (10,18,20). Nonetheless, PTSD was not higher in our study, as well as Jager et al.'s subjects who were referred patients with suspected misophonia (22). These differences are justified by different statistical population. 72% of the Jager et al.'s subjects had no comorbid axis I disorder. The highest co-morbid psychiatric disorder was MDD (6.8%), which is congruent with the present study. In axis II, 58.6% did not show any co-occurring disorders. The highest co-morbidity was Obsessive Compulsive Personality Disorder (OCPD) (2.4%) and then BPD (1.7%), which is inconsistent with the present study findings. In our study, 31.57% of the MS patients had personality disorder diagnosis (15.78% ASPD and 15.78% HPD). It should be noted that in the study of Jagger et al. (22), contrary to other mentioned studies (10,18), the prevalence of PTSD was not higher in the people with misophonia. In Jager et al.'s study, two cases of bias was mentioned as the study limitations. The first was selection bias happening as a result of the study location. Since Amsterdam University Center was the sole center providing treatment for misophonia. The second was confirmation bias because the MQ underwent some modification and were not psychometrically validated (22).

Quek et al. conducted a cross-sectional study on 92 psychiatric disorder sufferers complaining about misophonia symptoms (17). Mean age and sex distribution was similar to the present study. According to that study, depressive disorder was reported in the psychiatric history of 52.2% of the referred patients. In the current study, half of those with misophonia had MDD, a similar finding. However, Quek et al.'s study was on people who self-reported having misophonia, and our study looked at misophonia in people with psychiatric disorders. Besides, the main aversive sound in Quek et al.'s study (17) and in the present research was eating sound. Anxiety was significantly associated with the findings of MQ, while gender, age, depression and stress did not reveal any meaningful relationship with misophonia's severity (17). It is worth mentioning that the type of the questionnaire employed in the study by Quek et al. and the one by the current research differed. In the study of Quek et al., as in our study, the individuals without psychiatric disorders were not considered as a control group, which is a kind of limitation. Of other limitations in Quek et al.'s study was Depression, Anxiety, and Stress Scale-21 (DASS-21) self-report tool merely measuring only three items of depression, anxiety and stress in the past week. In the present study, the subjects were selected randomly and the psychiatric disorders were diagnosed based on DSM-5 during hospitalization.

In Jager et al.'s study, 96% of the cases were hatred of eating sounds and aversive sound of 85% individuals was breathing sounds (22). In our study, the most disgusting sound was the sound of others eating too. But the percentage was lower (in 36.8% of the individuals with MS and in 52.4% of the patients with SSM). In Jager et al.'s research, the reaction to aversive sound in 89.5% of the misophonic cases was anger (22), matching the current study findings. In the current study, a significant statistical association was discovered between MS and marital status, psychiatric disorder type and personality disorder. The only disorders that were more common in people with MS than in people without this syndrome were MDD and OCD. The relationship between psychiatric disorders and misophonia was reported in the studies done by Wu et al. (9), Rouw and Erfanian (18) and Quek et al. (17). In the study by Schröder et al., the comorbidity of OCD and misophonia was reported (21). Wu et al. concluded a moderate relationship between misophonia symptoms, and OCD, as well as anxiety and depressive symptoms (9). In their study, anxiety mediated between misophonia and the outburst of anger (9). In our study, OCD was 3 times higher in subjects with SSM. Studying 300 misophonic patients, Rouw and Erfanian reported that only PTSD was associated with misophonia symptoms (18). Quek et al., after removing the effect of intervening variables, suggested that despite the positive relationship between anxiety, depression and stress scores and misophonia, it can be concluded that depression probably does not play a role in the psychopathology of misophonia, while anxiety played such a role (17). These researchers reminded that the pathologic role of anxiety may mean that such

individuals are more responsive to and more aware of their surroundings and this status can be due to dysfunction of sympathetic nervous system (17,23). Quek et al. (17) verified the hypothesis proposed by Wu et al. (9) about the mediating role of anxiety between misophonia symptoms and anger.

As perceived, various studies have been performed about misophonia on different populations, which brought about some diverse findings, and these differences are the reasons why so far the prevalence, demographic characteristics, distribution and comorbidities are not clear cut. Regardless of different statistical communities, this issue may result from lack of similar criteria for diagnosing misophonia and few samples and selection and confirmation biases in various studies.

The patients' diagnoses were based on the information in their records. It is recommended that a similar study be performed on a group of patients with psychiatric disorders who do not have the limitation of hospitalization in the psychiatric ward history.

Conclusion

The prevalence of MS and SSM in patients with severe psychiatric disorders is noteworthy. Given the distressing impact of misophonia on patients, it is essential to consider it in diagnostic evaluations and treatment.

Acknowledgements

We are grateful to Mazandaran University of Medical Sciences for providing us with the opportunity to conduct this research.

Conflict of Interest

The authors declare no conflict of interest.

Funding

The Deputy for Research and Technology at Mazandaran University of Medical Sciences has supported this research.

Ethical Considerations

The study was reviewed and approved by the ethical research committee of Mazandaran University of Medical Sciences.

Code of Ethics

IR.MAZUMS.REC.1399.7505

Authors' Contributions

Mehran Zarghami conceived and designed the evaluation, interpreted the clinical data and revised the draft of the manuscript critically for important intellectual content. Fereshteh Aghabarari participated in designing the evaluation, collected and interpreted the clinical data, and drafted the manuscript. Ensiyeh Babaei participated in designing the evaluation, re-evaluated the clinical data, and revised the manuscript. Abbas Alipour participated in designing the evaluation, performed the statistical analysis and revised the manuscript. All authors read and approved the final manuscript.

References

1. Jastreboff MM, Jastreboff PJ. Components of decreased sound tolerance: Hyperacusis, misophonia, phonophobia. ITHS News Lett 2001; 2(5-7): 1-5.
2. Jastreboff MM, Jastreboff PJ. Decreased sound tolerance and tinnitus retraining therapy (TRT). Aust N Z J Audiology 2002; 24(2): 74.
3. Jastreboff PJ. Phantom auditory perception (tinnitus): Mechanisms of generation and perception. Neurosci Res 1990; 8(4): 221-54.
4. Jastreboff PJ, Gray WC, Gold SL. Neurophysiological approach to tinnitus patients. Am J Otol 1996; 17(2): 236-40.
5. Jastreboff PJ, Jastreboff MM. Treatments for decreased sound tolerance (hyperacusis and misophonia). Semin Hear 2014; 35(02): 105-120.
6. Brout JJ, Edelstein M, Erfanian M, Mannino M, Miller LJ, Rouw R, et al. Investigating misophonia: A review of the empirical literature, clinical implications, and a research agenda. Front Neurosci 2018; 7(12): 36.
7. Edelstein M, Brang D, Rouw R, Ramachandran VS. Misophonia: Physiological investigations and case descriptions. Front Hum Neurosci 2013; 25(7): 296.
8. Schröder A, van Diepen R, Mazaheri A, Petropoulos-Petalas D, Soto de Amesti V, Vulink N, et al. Diminished n1 auditory evoked potentials to oddball stimuli in misophonia patients. Front Behav Neurosci 2014; 9(8):123.
9. Wu MS, Lewin AB, Murphy TK, Storch EA. Misophonia: Incidence, phenomenology, and clinical correlates in an undergraduate student sample. J Clin Psychol 2014; 70(10): 994-1007.
10. Kumar S, Tansley-Hancock O, Sedley W, Winston JS, Callaghan MF, Allen M, et al. The brain basis for misophonia. Curr Biol 2017; 27(4): 527-33.
11. Sullivan JC, Miller LJ, Nielsen DM, Schoen SA. The presence of migraines and its association with sensory hyperreactivity and anxiety symptomatology in children with autism spectrum disorder. Autism 2014; 18(6): 743-7.

12. Ben-Sasson A, Carter AS, Briggs-Gowan MJ. Sensory over-responsivity in elementary school: Prevalence and social-emotional correlates. J Abnorm Child Psychol 2009; 37(5): 705-16
13. Rosenthal MZ, Neacsiu AD, Geiger PJ, Fang C, Ahn R, Larrauri J. Emotional reactivity to personally-relevant and standardized sounds in borderline personality disorder. Cognit Ther Res 2016; 40(3): 314-27.
14. Cabranes JA, Ancín I, Santos JL, Sánchez-Morla E, García-Jiménez MA, Rodríguez-Moya L, et al. P50 sensory gating is a trait marker of the bipolar spectrum. Eur Neuropsychopharmacol 2013; 23(7): 721-7.
15. Stansfeld SA, Clark CR, Jenkins LM, Tarnopolsky A. Sensitivity to noise in a community sample: I. Measurement of psychiatric disorder and personality. Psychol Med 1985; 15(2): 243-54.
16. Mehrabizadeh Honarmand M, Roushani K. [Investigation of psychometric properties of misophonia questionnaire]. Shefaye Khatam 2019; 7(2): 13-22. (Persian)
17. Quek TC, Ho CS, Choo CC, Nguyen LH, Tran BX, Ho RC. Misophonia in Singaporean psychiatric patients: A cross-sectional study. Int J Environ Res Public Health 2018; 15(7): 1410.
18. Rouw R, Erfanian M. A large-scale study of misophonia. J Clin Psychol 2018; 74(3): 453-79.
19. Dozier TH, Morrison KL. Phenomenology of misophonia: Initial physical and emotional responses. Am J Psychol 2017; 130(4): 431-8.
20. Erfanian M, Kartsonaki C, Keshavarz A. Misophonia and comorbid psychiatric symptoms: A preliminary study of clinical findings. Nord J Psychiatry 2019; 73(4-5): 219-28.
21. Schröder A, Vulink N, Denys D. Misophonia: Diagnostic criteria for a new psychiatric disorder. PLoS ONE 2013; 8(1): e54706.
22. Jager I, de Koning P, Bost T, Denys D, Vulink N. Misophonia: Phenomenology, comorbidity and demographics in a large sample. PLoS ONE 2020; 15(4): e0231390.
23. Gelder MG, Andreasen, NC, Lopez-Ibor JJ, Geddes JR. New Oxford .Textbook of Psychiatry. Oxford, UK: Oxford University; 2012.