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Original Research Article

Impact of chronic otitis media on mental health

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ABSTRACT

Background: Chronic otitis media can lead to a decline in health-related quality of life as well as social behaviour, putting persons at risk for depression, anxiety, and interpersonal antagonism. The goal of this study is to look at the relationship between depression, anxiety, and stress and also to assess the quality of life in CSOM patients. Objectives of the current investigation was to study the correlation of depression, anxiety and stress in patients suffering from CSOM and to know the quality of life in patients suffering from CSOM.
Methods: This is a cross-sectional study conducted at tertiary care hospital of Karnataka. Ninety-four patients of chronic suppurative otitis media were included in the study. The measurement of hearing loss was carried out by pure tone audiometry and the depression, anxiety and stress were scored taking depression, anxiety and stress scale and quality of life was assessed with chronic ear survey questionnaire.
Results: Patients with bilateral ear affected was found to have statistically significant depression and anxiety. Positive correlations found between DASS and CES score with hearing loss.
Conclusions: Depression, anxiety and stress in patients with CSOM caused by symptoms and saactivity restriction should be assessed during and after treatments and risk factors should be identified so that counselling and appropriate medications can be utilized to treat it if required. It will guide health care providers and researchers in effectively managing the impacts of CSOM.

Keywords: Chronic suppurative otitis media, Depression, Anxiety, Stress, Quality of life, Chronic ear survey, Pure tone audiometry

INTRODUCTION

CSOM is a common ENT presentation frequently encountered by many people. Patients mainly presents with complaints like hearing loss (HL), tinnitus, ear discharge which can affect their mental health. Hearing loss is a global public health problem, listed by world health organization as one of the leading causes of disability worldwide.[1] One of the main features of people suffering from chronic suppurative otitis media (CSOM) is hearing loss. Only few studies have been conducted on CSOM patients to focus the correlation of mental health with CSOM. Patients' quality of life (QoL) can be seriously impacted by CSOM. In the 1970s, the idea of quality of life emerged as a significant new healthcare outcome. The World Health Organization (WHO) defines quality of life as an individual's assessment of his or her place in life, in relation to his or her objectives, expectations, patterns, and concerns, in the context of the culture and value system into which he or she is inserted. Socioeconomic status, disease length, and occupational stress all have an impact on the typical audiologic alteration seen in CSOM patients, and they also play a role in depression. Although other scales exist to evaluate depression, the psychometric features of the DASS revealed better factor loading separation than other measures, and its tripartite paradigm of depression, anxiety, and stress which allows these symptoms to be distinguished. The main aim of our study is to know the correlation of depression, anxiety and stress in patients

suffering from CSOM by using DASS questionnaire and also to know the quality of life in patients suffering from CSOM with the help of chronic ear survey (CES) questionnaire. This will help health care takers to manage mental stress with hearing loss in CSOM.

METHODS

A 1.5-year cross-sectional study was carried out in ENT department in a tertiary care medical centre from June 2020 to 2021 on 94 subjects aged more than 18 years who presents with features of CSOM to Yenepoya medical college hospital, Mangalore. Individuals above 18 years who presented with CSOM without active ear discharge at the time of pure tone audiometry were included in the study. Individuals with history of neurological disorder or profound psychological distress, family history of sensorineural hearing loss, depression, using hearing aid were excluded from the study. After obtaining the institutional ethics committee clearance, data was collected. After detailed history and ENT examination, pure tone audiogram was done. PTA was measured at various frequencies with an audiometer and aural headphones to determine hearing thresholds, which were then divided into seven categories: normal (10-15 dB), slight (16-25 dB), mild (26 to 40 dB), moderate (41-55 dB), moderately severe (56-70 dB) severe (71-90 dB), profound (>90 dB) HL. The DASS was employed as a tool to measure the negative emotions of depression, anxiety, and stress. DASS (42) consist of 42 questions to assess depression, anxiety and stress.[2,3] CES is a 13-item questionnaire that assesses the frequency, duration, and severity of problems related to this disease. It is divided into three subscales that describe activity limitations, symptoms, and the use of medical resources. Based on the patient's responses, a score ranging from 0 to 100 can be calculated; the highest signifies the best health, while the lowest indicates bad health.[4]

Statistical analysis

Data obtained were recorded in MS Excel work sheets and statistical analysis was done using IBM SPSS 22 programme running on windows operating system. Data was expressed in terms of frequency and percentages. Data visualization was done using appropriate charts/graphs. Descriptive statistics of the explanatory and outcome variables were calculated by mean, standard deviation for quantitative variables, frequency and proportions for qualitative variables. Unpaired t test was applied to test the mean difference of activity restriction, symptoms, medical resource and CES score between the genders and laterality of ear affected. Chi square was applied to test the statistical significance between qualitative variables. ANOVA test was applied to test the statistical significance between the mean values of age in comparison with depression, anxiety, stress; Degree of hearing loss with CES score and DASS score. Pearson's correlation was applied to test the correlation between age and CES score variables. A 'p' value <0.05 were considered as statistically significant.

RESULTS

This is a cross sectional study conducted to find the association of depression, anxiety and stress in patients suffering from CSOM and also to know about the quality of life in patients suffering from CSOM. 94 patients were included in the study. The age range of participants in the study was 18-70 years with a mean (SD) age was 48.22±13.67. There was a male predominance in the study (61.7%) (Figure 1). In our study, 85.1% patients had CSOM in one ear and 14.9% patients had bilateral ear affected with the disease (Figure 2).

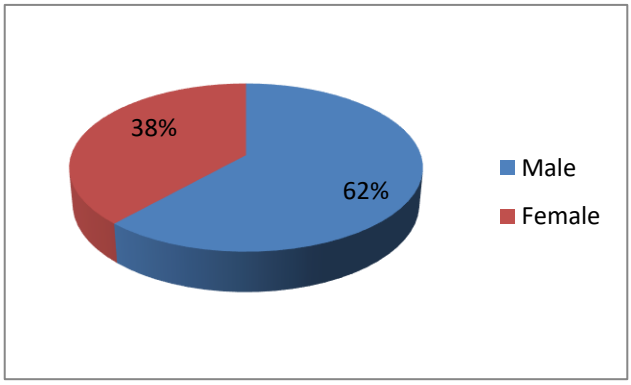

Figure 1: Distribution of the participants based on gender.

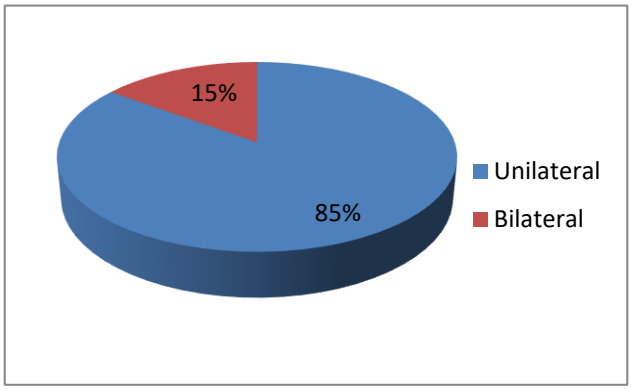

Figure 2: Distribution of the participants based on ear affected.

According to DASS score, 14 patients with bilateral ears affected with CSOM 8 patients were found to have depression and it was statistically significant with p value 0.001. Out of 80 patients with only one ear being affected only 2 were found to have depression. According to our study out of 14 patients with bilateral ear disease 11 were having anxiety and it was statistically significant with p value 0.001. In our study stress was not seen in patients with unilateral ear disease and was seen in only 3 patients with both ears affected. On comparing gender with depression, out of 58 males, 51 were found to be normal

and only 7 had depression and out of 36 females only 3 had depression which was not statistically significant. Anxiety was seen in only 13 males and 9 females whereas stress was seen in only 2 males and 1 female and both were not statistically significant. Also, in our study no significant difference was observed for age and depression, anxiety and stress.

According to CES score, patients with unilateral ear disease had mean total score of 63.99±12.16 and with bilateral ear disease had mean total score of 43.86±22.40. There was a significant difference between the activity restriction, symptoms and medical resource score in terms of laterality ear affected (p=0.00). There was no significant difference between the activity restriction, symptoms and medical resource score in terms of gender (p>0.05). According to our study patients with mild hearing loss had a mean value of DASS score of 5.70±1.42 and CES score of 65.87±1.42 and with severe hearing loss had DASS score of 22.33±7.51 and CES score of 16.36±5.71 and was statistically significant with p value 0.001.

Table 1: Distribution of the participants in terms of hearing loss (n=94).

Hearing loss	N	%
Mild	10	10.63
Moderate	72	76.6
Moderately severe	9	9.57
Severe	3	3.19
Total	94	100.0

Table 2: Association between depression and ear affected (n=94).

Depression	Laterality of ear affected		Total (%)	P value
	Unilateral (%)	Bilateral (%)		
Absent	78 (83.0)	6 (6.4)	84 (89.4)	0.001
Present	2 (2.1)	8 (8.5)	10 (10.6)	
Total	80 (85.1)	14 (14.9)	94 (100.0)	

Table 3: Association between anxiety and ear affected (n=94).

Anxiety	Laterality of ear affected		Total	P value
	Unilateral	Bilateral		
Absent	69 (73.4)	3 (3.2)	72 (76.6)	0.001
Present	11 (11.7)	11 (11.7)	22 (23.4)	
Total	80 (85.1)	14 (14.9)	94 (100.0)	

DISCUSSION

Chronic otitis media has been regarded as a serious condition with so many unpleasant symptoms that impact negatively on one's quality of life. Hearing loss, ear discharge, and tinnitus are all common symptoms among COM patients. At times ear discharge or tinnitus may be the main symptom of these patients other than hearing loss. Each of them could be more bothersome than the others. Chronic stress and psychological issues are likely to be triggered by COM. Despite the fact that COM illness has been studied in a variety of ways, there has been relatively very few research done to evaluate its impact on mental health and mental distress. In our study we used the DASS scale and CES questionnaire to assess patients. Our sample size included adults between 18-70 years of age. In our study no significant correlation of age was observed with depression, anxiety and stress. A study conducted by Li, et al hearing impairment and depression among US adults of all ages was significantly associated, especially among women and those younger than 70 years.[5] Our study showed that there was no correlation of gender with depression, anxiety and stress (Table 5). In a similar study conducted by Mehboob et al female patients suffered more hearing loss and depression as compare to the male patients in the selected groups of patients.[6] In a study conducted to assess depression, anxiety and stress scale in patients with tinnitus and hearing loss by Gomaa et al it was concluded that depression affects males when compared to females.[7] According to our study, patients with bilateral ears affected with CSOM were found to have depression and anxiety when compared with patients with symptoms only one ear and it was statistically significant (p value 0.001) (Tables 2-3). The frustration and disappointment with the condition of hopelessness, devaluation of life and lack of motivation causes behavioral abnormalities in CSOM patients. Presence of anxiety is due to autonomic arousal and skeletal muscle effects due to hearing loss in CSOM patients. There was no statistically significant difference between ear affected and stress in our study. Therefore, we agree with Gomaa et al who found out that there is no correlation between hearing loss, its symptoms and severity with stress and degree with the study of Hasson

et al which reflects that the hearing loss group developed stress.[6,8]

There was a significant difference between the activity restriction, symptoms and medical resource score in terms of laterality ear affected (p=0.00). In all subgroups lowest score was seen in patients who had disease in both ears when compared to only one ear affected patients (Table 4). Our study showed that patients with mild hearing loss had a mean value of DASS score of 5.70±1.42 and patients with severe hearing loss had DASS score of 22.33±7.5 which shows that as the hearing loss increases, total DASS score also increased and was statistically significant with p value 0.001 (Table 6). Another study was conducted to evaluate the relationship between hearing loss and cognition and depression in 5043 patients found that hearing loss increased the incidence of depression.[9]

Table 4: Association between CES score and ear affected.

CES	Ear affected	N	Mean	SD	Mean difference	P value
Activity restriction	Unilateral	80	44.93	12.16	19.68	0.00
	Bilateral	14	25.25	22.28		
Symptoms	Unilateral	80	57.63	5.67	15.98	0.00
	Bilateral	14	41.65	17.12		
Medical resource	Unilateral	80	87.81	15.53	42.46	0.00
	Bilateral	14	45.36	37.59		
Total CES score	Unilateral	80	63.99	8.79	20.14	0.00
	Bilateral	14	43.86	22.40		

Table 5: Association between CES score and gender.

CES	Gender	Mean	SD	Mean difference	P value
Activity restriction	Male	42.57	17.42	1.48898	0.65
	Female	41.08	12.42		
Symptoms	Male	54.96	11.39	-.745	0.72
	Female	55.71	7.50		
Medical resource	Male	81.29	27.63	-.512	0.92
	Female	81.81	20.95		
Total CES score	Male	60.65	15.95	-.899	0.75
	Female	61.55	9.166		

Table 6: Association between CES score and DASS score with degree of hearing loss.

Scores	Degree of hearing loss	N	Mean score	SD	F value	P value
DASS score	Mild	10	5.70	1.42	84.719	0.001
	Moderate	72	5.75	1.57		
	Moderately severe	9	10.67	1.94		
	Severe	3	22.33	7.51		
	Total	94	6.74	3.718		
Total CES score	Mild	10	65.87	7.71	28.799	0.001
	Moderate	72	63.91	8.95		
	Moderately severe	9	47.14	18.11		
	Severe	3	16.36	5.71		
	Total	94	60.99	13.70		

In another study on 7389 respondents found that hearing impairment was associated with a high probability of depression and anxiety disorder.[10] Depression seen in these individuals could be related to their disability and feelings of low self-esteem.

In deaf individuals, low self-esteem which is often a component of depression was discovered to be an important sign of mental stress.[11] Fellinger et al observed that profound HL, the most common symptom of COM patients is related with depression, anxiety, and phobic anxiety. In addition, social withdrawal, communication disruption, and a poor relationship with family and environment have all been reported in HL patients.[11-15] In general, past research has concentrated on the influence of hearing loss on QoL, but less attention has been paid to some other very prevalent COM symptoms such as ear discharge and tinnitus. So, in our study we used CES questionnaire to assess symptoms, activity restriction and medical resource usage attributable to chronic otitis

media. In our study an inverse relation with degree of hearing loss and total CES score was seen which statistically significant with (p=0.001) thus shows that hearing loss is associated low quality of life (Table 6).

Few studies shows that HL, which is the most common symptom of COM, can affect psychosocial functioning and quality of life.[11,17,18] Fellinger et al found that the QoL of patients with hearing loss was substantially related to their level of comfort with their hearing using a general QoL scale.[12] Monzani et al reported that patients with mild or moderate acquired HL had poorer social functioning and emotional roles than controls.[16] In a study conducted by Bakir et al the psychological well-being and quality of life of COM patients were unaffected by their HL levels.[19] Some support to this finding comes from the study of Graaf et al which found no link between the degree of objective or subjective HL and mental anguish, lends some credence to this conclusion.[11]

Limitations

Data on depression, anxiety, stress and activity restriction, medical resources and symptoms were collected by self-reported questionnaires, which were limited to responses based on the past week's emotions. Patients with family history of hearing loss or depression were excluded from the study. The majority of the people in our study had mild tinnitus and no bothersome intermittent ear drainage. This study's cross-sectional design and small sample size prevent us from generalizing our observations.

CONCLUSION

Our results demonstrated that patients with CSOM affected in both ears had more chance of having some degree of depression, anxiety and stress. seem to have poorer QoL and higher psychological problems that are most probably related with their HL and severity of symptoms. Hence, clinicians treating COM patients should keep in their mind that these patients most of them, may benefit from psychosocial support or interventions. Depression, anxiety and stress in patients caused by symptoms, activity restriction as a result of CSOM should be assessed during and after treatment, and risk factors should be identified so that counselling and antidepressant medication can be utilized to treat it (if required). It will guide caregivers on how to heal the patient mentally and physically. These findings will aid health care providers and researchers in effectively managing the impacts of CSOM.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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