

# Presentation of dizziness in individuals with chronic otitis media

data from the multinational collaborative COMQ-12 study

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## Background

In chronic otitis media (COM), disease chronicity and severity of middle ear inflammation may influence the development of inner ear deficits, increasing the risk of vestibular impairment. Although not the chief complaint, patients with COM frequently report vestibular symptoms including vertigo, postural instability, and disequilibrium. Vestibular function test abnormalities are commonly detected even in asymptomatic patients, which may indicate central compensation in daily situations [1]. Cadaveric studies of human temporal bones have also demonstrated significant loss of both cochlear and vestibular hair cells in specimens from donors who had COM [2].

Disease-specific questionnaires assess the impact of specific symptoms and sequelae from the patients' perspective to enable a comprehensive evaluation of health-related quality of life (HRQoL). In 2018-19, a multinational collaborative project was performed, utilizing the Chronic Otitis Media Questionnaire-12 (COMQ-12) to assess patient-reported HRQoL in nine otology centres across eight countries [3]. This study is based on this dataset. Here, we report the presentation of dizziness in a large cohort of COM patients and identify associated disease-related characteristics.

## Methods

- Adult patients (16 years and older) with a diagnosis of COM in outpatient settings
- We investigated the presence of vestibular symptoms (dizziness and/or disequilibrium) using participant responses to item 6 of a native version of the COMQ-12
- Audiometric data and otoscopic assessment (discharging; perforated TM; cholesteatoma) were recorded
- In the present analysis, the item 6 score was collapsed into a binary dependent variable (>0 or 0), representing the presence or absence of dizziness, respectively
- Identification of significant determinants of dizziness was performed using logistic regression analysis. Odds ratios and their 95% confidence intervals were calculated, with both unadjusted and adjusted values reported
- Gender was not recorded for UK study participants and therefore has not been adjusted for in the present analysis
- To model a geographic effect, we used the following region classifiers: Europe (France, Italy, Turkey, UK) and Asia (China, Japan, Korea).

## Key Results

1. 477 participants suffering from COM, with 56.2% (n=268) reporting at least mild inconvenience related to dizziness or disequilibrium
2. Significant association between air conduction thresholds in the worse hearing ear and presence of dizziness
3. Study participants in European countries and Colombia were more likely to report dizziness than participants in Asian countries
4. Ear discharge and cholesteatoma showed no association with dizziness

## Tables

**Table 1.** Distribution of perceived severity of dizziness and associated participant characteristics (n=477)

Perceived dizziness severity <sup>a</sup>	n (%)	Mean age (SD)	Mean hearing <sup>b</sup> (dB, SD)	Overall HRQoL <sup>c</sup> (SD)
0	209 (43.8)	47.1 (19.1)	30.6 (17.3)	18.7 (10.0)
1	79 (16.6)	51.7 (16.8)	34.8 (19.3)	19.9 (10.2)
2	49 (10.3)	45.6 (17.2)	34.6 (23.0)	27.2 (9.8)
3	60 (12.6)	48.5 (18.2)	29.2 (14.4)	28.9 (9.2)
4	52 (10.9)	47.5 (18.2)	32.0 (17.9)	32.1 (10.5)
5	28 (5.9)	54.0 (17.8)	41.3 (20.3)	38.3 (10.8)

<sup>a</sup>Determined by participant responses to item 6 in the Chronic Otitis Media Questionnaire-12 (COMQ-12). Answers were presented using a 6-point Likert scale (0 = no inconvenience, 1 = minor inconvenience, 2 = moderate inconvenience, 3 = major inconvenience but can cope, 4 = major inconvenience and difficulty coping, 5 = worst thing ever affected life).

<sup>b</sup>Overall hearing disability as calculated according to the Department of Health and Social Security (DHSS) formula: [(4 x better hearing ear) + (worse hearing ear)]/5.

<sup>c</sup>Mean total COMQ-12 score excluding item 6.

Abbreviations: dB, decibel; HRQoL, health-related quality-of-life; SD, standard deviation.

**Table 2.** Logistic regression analysis of factors associated with presence of dizziness reported by patients with chronic otitis media (n=477)

Factors	Unadjusted OR (95% CI)	p	Adjusted OR (95% CI)	p
Worse-ear hearing	1.01 (1.00–1.02)	<b>0.0306</b>	1.01 (1.00–1.02)	<b>0.0177</b>
Ear discharge (present vs. absent)	1.49 (0.95–2.33)	0.0801	1.30 (0.75–2.22)	0.3510
Cholesteatoma (present vs. absent)	1.01 (0.65–1.59)	0.9510	0.95 (0.55–1.67)	0.9163
European countries vs. Asian countries	1.74 (1.22–2.48)	<b>0.0206</b>	1.53 (1.03–2.28)	<b>0.0344</b>
Colombia vs. Asian countries	3.33 (1.88–5.89)	<b>&lt;0.0001</b>	2.48 (1.25–4.92)	<b>0.0096</b>
Colombia vs. European countries	1.92 (1.10–3.30)	<b>0.0192</b>	1.62 (0.83–3.14)	0.1563

Significant p values are highlighted in bold.

Abbreviations: CI, confidence interval; OR, odds ratio

## Conclusion

- The validated COMQ-12 questionnaire is a useful screening tool for common symptoms and sequelae of COM.
- Vestibular symptoms frequently contribute to burden of disease in patients with COM and associates with hearing disability in the worse hearing ear
- This could represent a threshold effect, whereby the inflammatory disease processes have caused sufficient inner ear injury, with associated deterioration in vestibular function, such that central compensation is no longer adequate
- Geographical variation in presentation of dizziness may reflect financial barriers to treatment or cultural differences in how patients reflect on their health state

## References

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